EN

Q22M Camera Manual Part 1

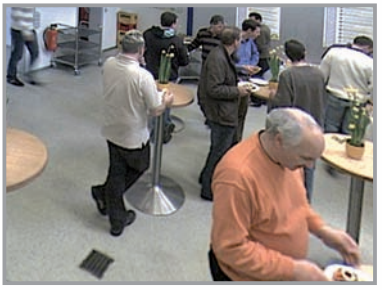
The HiRes Video Company

Allround Easy. Allround Secure.

MOBOTIX' ultra-compact, weatherproof IP Dome camera is so inconspicuous that many do not recognize it to be a camera. Thanks to its 360° allround view, the camera can monitor and record, event-driven, an entire room.

Full Image

Image Correction



Virtual PTZ Features

Powerful performance in complete video solutions ...

- Hemispherical allround view for complete room coverage
- Digital, continuous zooming and panning (virtual PTZ)
- Robust and maintenance-free, without mechanically moving parts
- Event-controlled, complete room recording directly in the camera
- Alarm function, speaker and microphone integrated
- Discreet and inconspicuous design

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HiRes
3 Megapixel
2048 x 1536
Software zoom

Skyline
Format free
Each image format freely definable

30 Frames/s
VGA (640 x 480)
12 F/s Mega

Virtual PTZ
Digital pan, tilt, zoom

Backlight
Safe using CMOS without mechanical iris

Internal DVR
Internal via SD card, external via Network

Win/Lin/Mac
Recording
via Network on PC up to 1 Terabyte

Microphone & speaker
Audio
bi-directional via IP, variable framerates

SIP-Client with video
IP-Telephony
Alarm notify, cam remote control

Video motion
Multiple windows precision pixel-based

-22°F ... +140°F
Weatherproof
- 30° ... +60°C, IP65, no heating necessary

IEEE 802.3af
PoE
Network power even in winter

Robust
No moving parts fiber glass housing

MxCC
Licence free
Video-Management-Software

www.mobotix.com

HiRes Video Innovations

The German company MOBOTIX AG is known as the leading pioneer in network camera technology and its decentralized concept has made high-resolution video systems cost-efficient.

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Q22M Camera Manual Part 1

MOBOTIX Camera Data

Enter the data of your camera here!

Camera Model: _____

Camera Name: _____

Factory IP Address: ___ . ___ . ___ . ___

Current IP Address: ___ . ___ . ___ . ___

DHCP: activated ❑ deactivated ❑

Admin User Name: _____

Admin Password: _____

Note: MOBOTIX offers inexpensive seminars that include a workshop and practical excercises: **Basic Seminar** 3 days, **Advanced Seminar** 2 days. For more information, see **www.mobotix.com**

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Note

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Note

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MOBOTIX Cost Benefits

1. **Increased resolution reduces amount of cameras**
   1536-line, high-resolution sensors give a better overview and allow monitoring an entire room with just one camera from the corner

2. **Reduced installation costs at any distance**
   Standard Ethernet connection enables the use of common network components such as fiber, copper and wireless (WiFi)

3. **Intelligent recording technology reduces storage**
   Decentralized recording technology in the camera software puts less strain on PCs and reduces the amount of storage PCs (DVRs) by 10 times

4. **Event-controlled image rate minimizes storage cost**
   Event-driven, automatically adjusted recording frame rate based on event or sensor action reduces amount of data and storage costs

5. **No additional power and no heating required**
   Anti-fogging without heating allows usage of standard PoE technology to power the system via network and saves costs of power cabling

6. **Backup power requirement reduced by 8 times**
   Low power consumption, 3 Watt, enables year-round (no heating required) PoE with one centralized UPS from installation room via network

7. **Robust and practically maintenance free**
   Fiberglass-reinforced composite housing with built-in cable protection and no mechanical moving parts (no autoiris) guarantees longevity

8. **No software and no licence costs**
   Control and recording software is integrated in the camera and is free of charge; new functions are available via free software downloads

9. **Unlimited scalability and high return on investment**
   While in use, more cameras and storage can be added at any time; image format, frame rate & recording parameters can be camera specific

10. **Additional functions and other extras included**
    Audio support, lens, wall mount and weatherproof housing (-30° to +60°C, -22° to +140°F) included; microphone & speaker available in certain models

MOBOTIX Technical Advantages

1. **Progressive-scan instead of half-frame blur**
   Megapixel sensor and image processing inside the camera with digital white balance generates sharp and true color images at every scale

2. **Sun and backlight compensation**
   CMOS sensor without auto iris, digital contrast enhancement and configurable exposure measurement zones guarantee optimum exposure control

3. **Dual camera technology: 2-in-1**
   Two possible camera views with picture-in-picture technology or 180° panoramic view; one Dual-Fixdome camera with 2.5 megapixel is enough

4. **Long-term, high-performance Terabyte recording incl.**
   Event detection and ring buffer recording by the camera itself allow recording of 40 smooth video streams on a single PC (1200 VGA images/s)

5. **Simultaneous recording, event search and live viewing**
   Live video for multiple users, recording and event search simultaneously possible in seconds from anywhere in the world via network

6. **Very low network load**
   Efficient MxPEG video codec, motion detection based recording and video buffering inside camera guarantee a very low network load

7. **Bridging of recording during network failures**
   Internal camera ring buffer bridges network failures and bandwidth fluctuations of wireless links (WLAN/UMTS) for several minutes

8. **Day & night maintenance free**
   Unique Day/Night camera technology without moving parts guarantees extreme light sensitivity and ensures long-term reliability

9. **Audio and SIP telephony**
   Lip-synchronized audio (live & recording); each camera is a video IP telephone based on SIP standard with automatic alarm call and remote control

10. **MxControlCenter included**
    Dual screen technology with building plans, free camera positioning, event search, image processing, lens distortion correction and PTZ support

1 INTRODUCTION

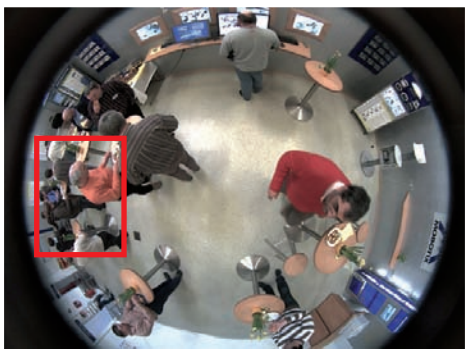
Congratulations on your decision to purchase an extraordinarily elegant and discreet network camera "Made in Germany"! Like all other MOBOTIX cameras, the Q22M uses a **high-resolution color image sensor with 3.1 megapixels** and brings you prime quality combined with convincing features.

Just One Camera Monitors an Entire Room

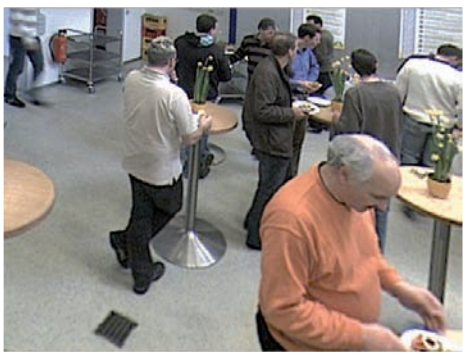
The **MOBOTIX Q22M Hemispheric** is a maintenance-free, professional **network dome camera with 360° allround view** in a beautifully designed, compact and weatherproof housing that includes a speaker and a microphone. The addition **"hemispheric"** is derived from the Greek word "hemisphairion". This designation perfectly describes the Q22M since the image delivered by the 180° lens is similar to a hemisphere in three-dimensional space in which the camera is positioned at the center of the hemisphere's base, thus providing 360° surveillance. As a result, one Q22M can monitor an entire room and in addition offers a variety of other interesting features for viewing and recording images or combined video and audio.

Automatic Image Correction in the Live Image

The **full image in QXGA format** (2048x1536 pixels) taken by hemispherical (fish-eye) lenses cannot be easily examined by the user. The MOBOTIX Q22M elegantly solves this problem thanks to its integrated image distortion correction that displays perfectly corrected live images with straight lines in resolutions up to D1-PAL (768x576 pixels).



Full Image, QXGA



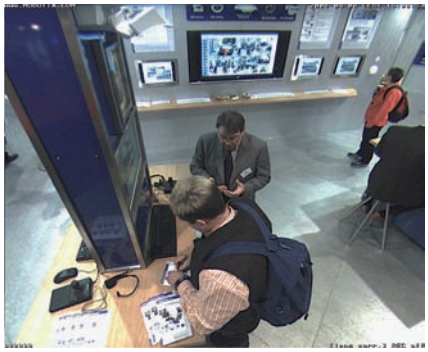
Corrected live image, VGA

vPTZ: Virtual Pan/Tilt/Zoom Features

The **virtual PTZ features (vPTZ)** are already part of the integrated Q22M camera software. This means that you can continuously zoom into or out of the live image and move to any position in the image directly in the browser using either the mouse wheel or a joystick. The optional PTZ control panel allows using the zoom and pan/tilt features in a similar manner. Thanks to its 180° lens, a Q22M installed in a ceiling provides 360° allround view and all the other features of a standard PTZ camera **at a fraction of the costs** and without the unreliability and maintenance requirements caused by mechanical components.

Joystick:
Internet Explorer with activated **MxPEG ActiveX plug-in**, **MxControlCenter** (V1.8 or higher) or **MxEasy** required

Full Image

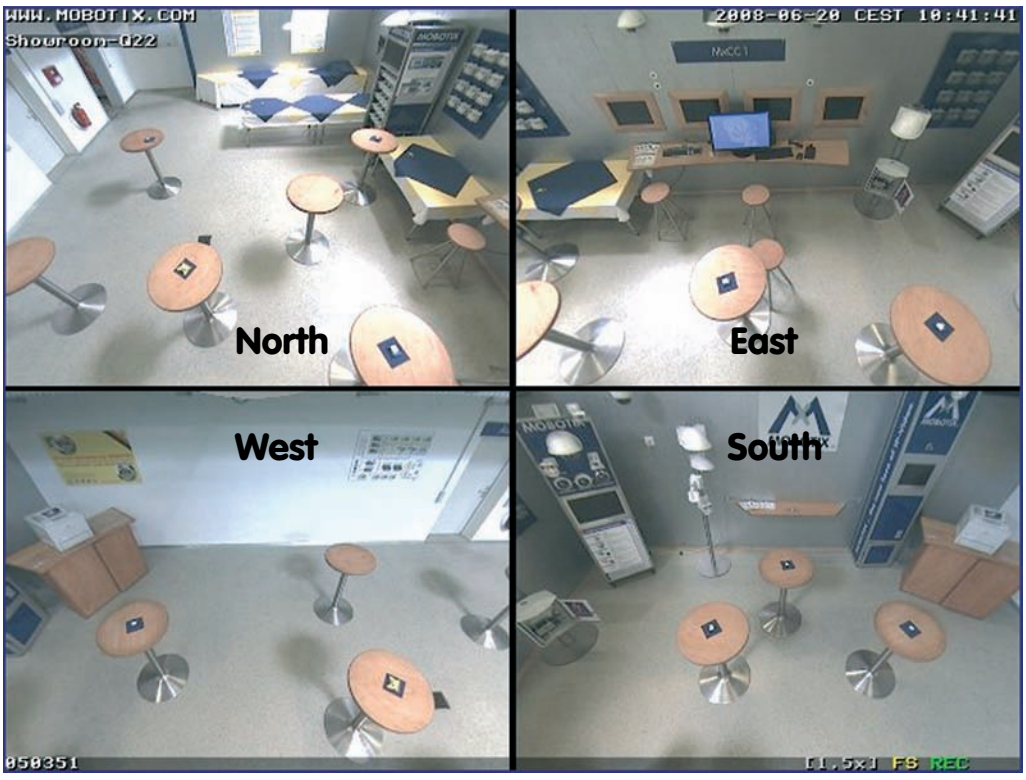


Panned live image

Zoomed live image

Normal, Full Image and Surround Display Modes

Besides the corrected mode (**Normal**, up to D1-PAL with 768x576 pixels) and the full image mode with hemispherical display (**Full Image**, up to 2048x1536 pixels), the **Surround** mode presents the images of four virtual cameras in each of the four di-



Surround display mode with virtual Quad view offers **360° Allround Surveillance of a complete room in a single view**

rections *North*, *East*, *South* and *West*, thus covering the entire room in one image. The preset North position can be moved to any direction in the image; the camera generates the three other directions automatically and stores them as separate views.

Simultaneous Corrected Live Image and Full Image Recording

All commonly used PTZ cameras only store the image that is currently viewed in the live image (**live image recording**). This has one serious disadvantage as the recording can only show what has happened in the "visible" portion of the image; the rest is lost and cannot be examined later on.

Stored image of a regular PTZ camera

MOBOTIX has hence added the new **full image recording** feature to the Q22M. This will not store the currently viewed image that reflects the pan/tilt position and the zoom setting chosen by the user, but the full sensor image, without vPTZ settings or image correction. When examining the recorded images, the vPTZ features again come into play as they allow zooming the visible image and use the pan/tilt features to examine every corner of the recorded full image.

This allows examining the entire recorded full image using the integrated vPTZ features!

Stored full image of the Q22M

Examination of the stored full image

The vPTZ features thus provide a method for closer **examining** the recorded **full image video sequences**. This also allows examining the parts of an image or video after the event that had not been on the live image on display at the time of the recording. The person highlighted by the red circle in the left image would not have been recorded by a regular PTZ camera; the full image recording of the Q22M in this example allows determining the exact time at which the person had entered the image area recorded by the camera.

A browser (Internet Explorer with **MxPEG ActiveX plug-in**), **MxControlCenter** or the new, multi-platform **MxEasy** (currently in development) can be used to examine the recorded sequences.

Storing and Loading of Predefined Views

In order to facilitate the work of the users, the Q22M can store a total of **256** views (virtual camera direction and zoom setting) including the **North**, **East**, **South** and **West** standard views that can be loaded again using joystick keys or softbuttons.

Automatic Camera Movements

Besides being able to manually move the virtual camera to specific positions and zoom settings, the camera can also "move" automatically. The camera can automatically move through the **North**, **East**, **South** and **West** views or it can move through the first 15 saved camera views (similar to a tracking shot at a movie production). In addition, the camera can also use its **automatic panning features**, which slowly turn the virtual camera to the right or to the left.

Internal SD Card Storage of up to 16 GB

The Q22M-Secure models feature integrated SD card storage, which makes the camera fully independent of any external storage media, even for longer periods of time. When using a 16 GB SD card, for example, the camera can store more than a quarter million event images in VGA format (640x480). For security reasons, the camera can even encrypt the stored data.

Power failures are not an issue, as the video and image sequences remain safely stored on the SD card. To access the stored video sequences, simply open the camera user interface in the browser, **MxControlCenter** or **MxEasy**. If you would like to archive sequences, you can store all of the data or only certain parts to a computer or a hard disk.

MxControlCenter: Download free of charge from www.mobotix.com

MxEasy is currently under development

Joystick: Internet Explorer with activated **MxPEG ActiveX plug-in**, **MxControlCenter** (V1.8 or higher) or **MxEasy** required

Q22M-Secure models support SD card storage. A 1 GB SD card is included in the delivered Secure models!

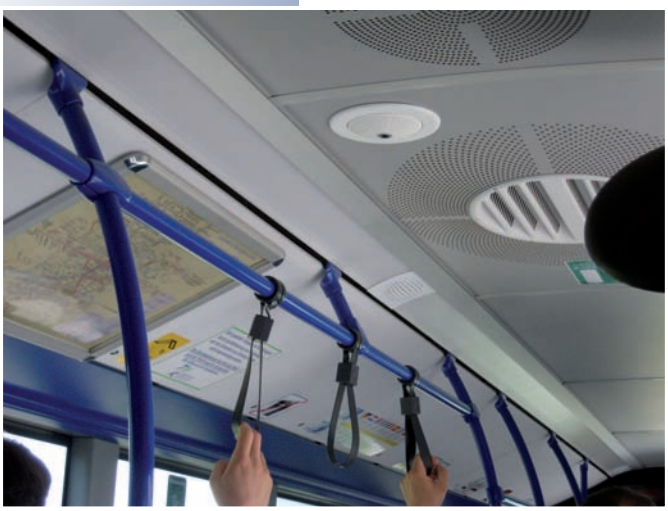
Camera Design Creates New Applications

Some applications scenarios benefit from a surveillance camera that is present, but without attracting attention. The low-key, elegant appearance of the camera, especially when installed with the In-Ceiling set, makes the Q22M an optimum solution where decent design and an inconspicuous look are important. Take hotels and restaurants, for example, but also installations in public buildings, waiting rooms and showrooms.

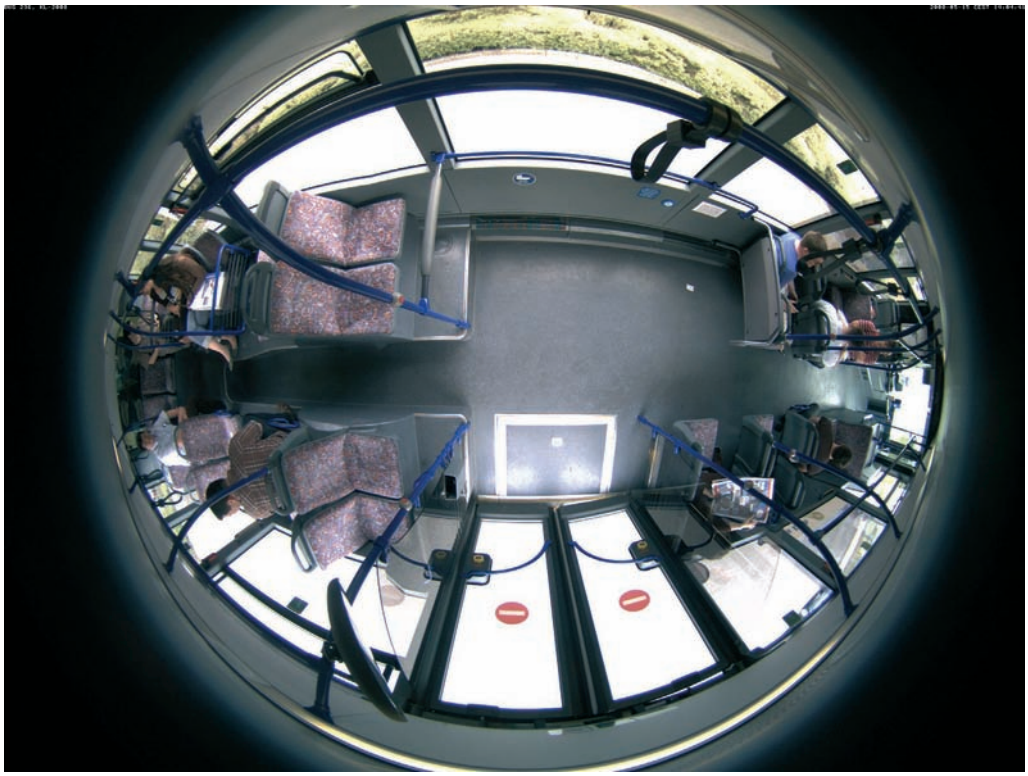
Public transportation application

Its integrated DVR functionality with long-term storage on SD card (with optional encryption) also makes the camera an ideal solution for **mobile applications** since it only requires a power supply via the network cable (standard PoE) for full event-driven recording with video and audio, thus delivering a complete stand-alone product. Application examples in this context are installations in public transportation such as busses, trains, aboard ships, airplanes, etc.

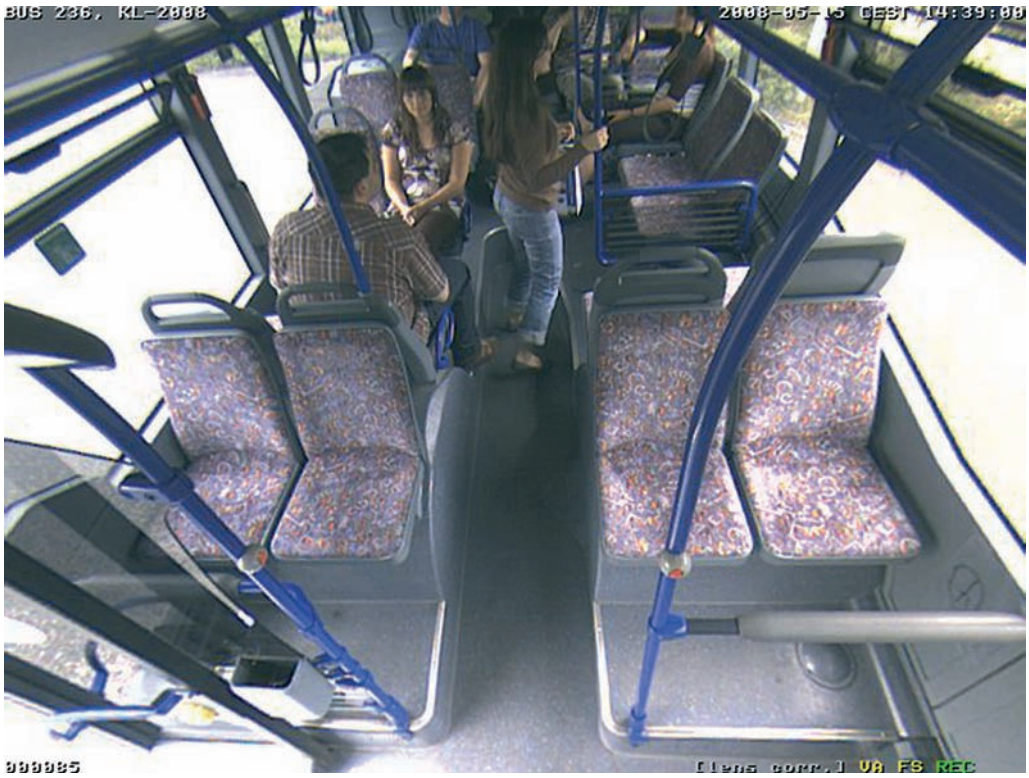
Q22M-Secure models in the busses of the public transportation authority at Kaiserslautern, Germany



Since the Q22M is just as robust, weatherproof and maintenance-free as all other MOBOTIX cameras (Q22M-Secure attains IP65), it can be used without limitations in all mobile and fixed installations, including outdoor applications.



Mobile Q22M application in a bus: Full image (QXGA, uncorrected) of the rear exit



Corrected VGA live image of the same camera, panned and zoomed

*The Q22M with L22 90° lens will be available at a later point in time

Model Versions

The Q22M is available as **Secure and Basic models**, which come with different feature sets. Both models can also be ordered with an **L22 Super Wide-Angle lens*** with a horizontal image angle of 90°.

High resolution: QXGA format with 2048x1536!

Corrected live image up to D1-PAL format 768x576!

30 Frames Per Second in Uncorrected VGA Format

Like all other MOBOTIX cameras, the Q22M models can generate live video streams with high frame rates and up to 3.1 megapixels image resolution (QXGA with 2048x1536 pixels). When showing VGA video (640x480), the camera can deliver up to 30 frames per second. Even Megapixel video (1280x960 pixels) will still generate up to 12 fps including lip-synchronous live audio from its microphone.

When using the **Normal** and **Surround** display modes, the frame rates drop slightly due to the computing power required for correcting the images.

PoE even in the winter!

Robust and Maintenance-Free

Thanks to its low power consumption of about 3 Watts and the total absence of mechanically moving parts, the Q22M models feature the highest operating temperature range from –30°C to +60°C (-20°F to +140°F) and are absolutely dustproof and resistant against water jets (Q22M-Secure IP65; Q22M-Basic IP54). Since the cameras neither fog up nor require heating, power can be supplied all-year round via the network cabling using standard PoE products.

Everything integrated!

More Features for Less Money

Similar to the other MOBOTIX cameras, the Q22M models outperform by far what is considered industry standard today. The integrated software brings a whole range of features, such as video motion detection, long-term recording, alarm messaging and video IP telephony to name but a few features (speaker and microphone are also integrated). Unlike in camera systems from other manufacturers, buying and installing additional software is thus unnecessary.

MxControlCenter: Download free of charge from www.mobotix.com

Displaying and controlling MOBOTIX cameras:
- In the Browser
- In MxControlCenter
- In MxEasy

Instead of using a web browser, you can download and install the free-of-charge **MxControlCenter** from the MOBOTIX website. This program provides fas displaying of multiple cameras on one monitor, provides for comfortably searching events and evaluating the alarm video clips and presents additional alerting features (including audio).

The new **MxEasy** is the multi-platform software for Windows, Macintosh and Linux systems, which provides for easy operation of the MOBOTIX system thanks to its intuitive user interface, thus creating a new user experience when viewing and controlling MOBOTIX cameras.

MxEasy is currently under development

Universal Accessories for the MOBOTIX Q22M

The camera is not included in the delivery of the corresponding set!

On-Wall Set (MX-D22-OPT-AP)

The On-Wall set can reliably protect external cables to the Q22M if the cables cannot be guided from below the housing but have to be led above the wall. The weatherproof housing also offers additional space for extra modules (e.g. a rechargeable battery against power failures).

On-Wall set (IP65, suitable for outdoor applications)

On-Wall Set 10°

This On-Wall set is identical to the regular On-Wall set, except that the mounted camera is inclined by 10 degrees. The incline makes it possible for the camera to deliver the best images even in demanding situations.

On-Wall set 10° (IP65, suitable for outdoor applications; available Q4/2008)

In-Ceiling Set (MX-D22-OPT-IC)

The In-Ceiling set allows mounting the Q22M cameras in fake ceilings, for example, thus providing a secure, yet elegant and unobtrusive installation option.

In-Ceiling set (indoor)

Vandalism Set (MX-Q22-OPT-VANDAL-...)

Vandalism set with mini dome (IP65, suitable for outdoor applications)

The Vandalism set reliably protects the Q22M against mechanical impact. The set consists of a robust stainless steel cover, a dome made of polycarbonate and security screws. A camera equipped with the Vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hot spots, train stations, etc.).

Wall Mount (MX-D22-OPT-WH)

Wall Mount made from sturdy PBT-30GF (IP65, suitable for outdoor applications)

This mount is the ideal solution for mounting the Q22M to walls in indoor and outdoor applications. The camera is absolutely dust-proof and resistant against water jets (IP65). The Wall Mount also covers RJ45 wall outlets and has ample space for additional modules (e.g. WLAN, WiFi).

Pole Mount (MX-D22-OPT-MH)

Pole Mount: Outdoor quality made of 3 mm stainless steel (in conjunction with Wall Mount)

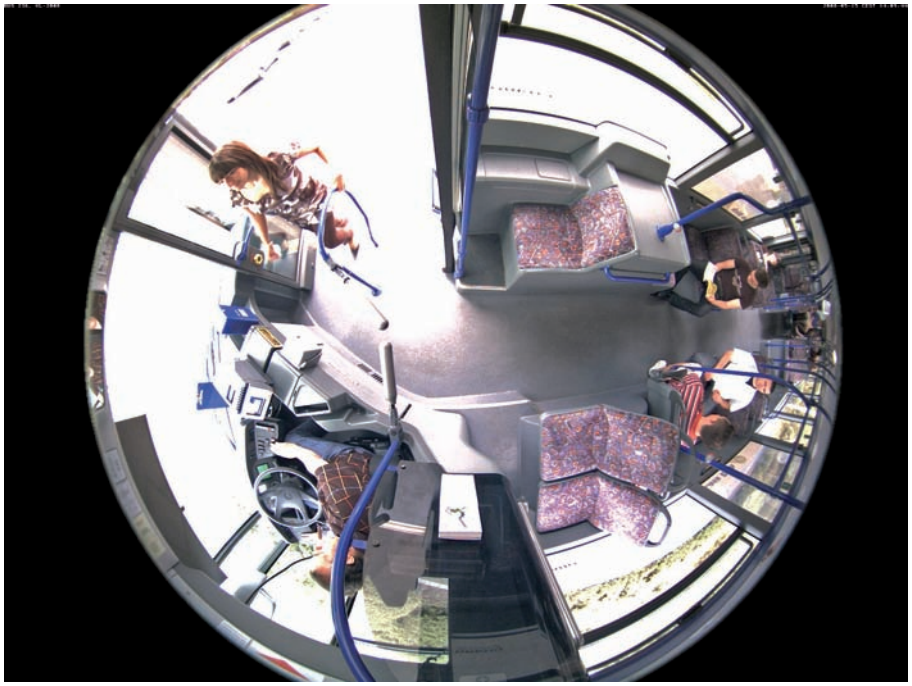
If you would like to mount the MOBOTIX Q22M to a pole, you should consider using the MOBOTIX Pole Mount. This mount can only be used in conjunction with the wall mount. The supplied stainless steel straps allow attaching the mount to poles with diameters between 60 and 180 mm (2.4 to 7.1 in).

Notes:

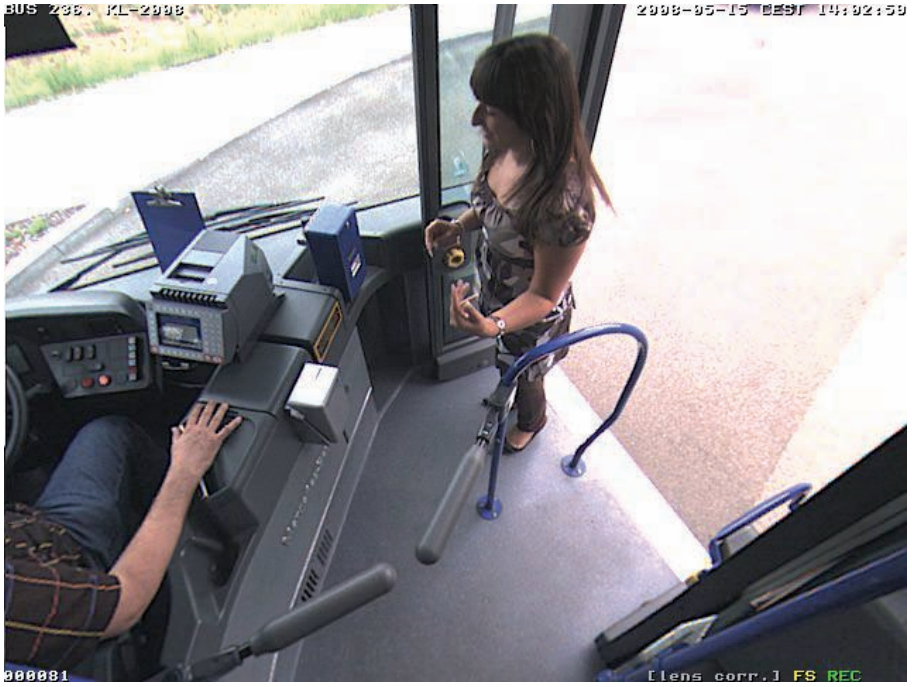
1.1 Lens Options, Hardware and Software Features

*The Q22M with L22 90° lens will be available at a later point in time

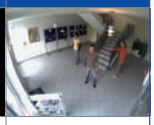
MOBOTIX Q22M cameras come with a standard **L11 Fisheye lens** that has a **horizontal image angle of 180°**. If desired, you can order the camera with an **L22 Super Wide-Angle lens*** (horizontal image angle of 90°). The integrated virtual PTZ features of the camera software or MxControlCenter/MxEasy properly correct the lens distortion that is specific to each of the lenses. Both lenses deliver good image quality even when using maximum digital zoom. Since MOBOTIX cameras are backlight-proof, they do not require a mechanical auto iris, making them extremely robust and maintenance-free.



Full Image wih L11 Fisheye 180° in a bus



Corrected Normal image with L11 Fisheye 180° in vPTZ mode

Lens Table		
Part Name	**L11**	**L22***
Original image		
35 mm equivalent	11 mm	22 mm
Actual focal length	1,8 mm	4 mm
Aperture	2.0	2.0
Image angle horizontally	180°	90°
Image angle vertically	160°	67°
Distance 1 m (3 ft)	**m**	**m**
• Image width	infinite	2.0
• Image height	11	1.3
Distance 5 m (3 ft)	**m**	**m**
• Image width	infinite	10.0
• Image height	55	6.6
Distance 10 m (3 ft)	**m**	**m**
• Image width	infinite	20.0
• Image height	110	13.3
Distance 20 m (3 ft)	m	m
• Image width	infinite	40.0
• Image height	220	26.0

*The Q22M with L22 90° lens will be available at a later point in time

Note

The focal lengths of MOBOTIX lenses do not reflect the actual focal length of the lenses, but the focal length (*Lxx* mm) converted to 35 mm camera format. For example, the MOBOTIX Super Wide-Angle lens has an actual focal length of 4 mm. This would be the equivalent of 22 mm on a 35 mm camera. This lens is thus called *L22*.

Converting the focal lengths to 35 mm camera as a known format provides for better comparing the image formats and the fields of vision of the different lenses. Another benefit is that you can easily set a 35 mm camera (analog or digital) to the same focal length as the MOBOTIX lens (L**xx**) to obtain the same field of vision. This approach greatly facilitates lens selection.

Focal lengths of MOBOTIX lenses are always given as compared to a 35 mm camera

To determine the lens you need, simply use a camera with zoom lens to find a matching MOBOTIX lens

Q22M Camera Manual Part 1

**The Q22M with L22 90° lens will be available at a later point in time

*Special adapter cable for USB required; will be supported in a future software update

*1 GB SD card is included in the delivered Q22M-Secure models. MOBOTIX cameras support SD cards with up to 16 GB.

		Q22Mi-Basic D11 *MX-Q22Mi-Basic-D11*	Q22Mi-Basic D22 *MX-Q22Mi-Basic-D22*	Q22M-Secure D11 *MX-Q22M-Sec-D11*	Q22M-Secure D22 *MX-Q22M-Sec-D22*
Q22M Hardware Features					
Outdoor weatherproof		IP54	IP54	IP65	IP65
Ethernet/ISDN/USB/RS232		E /- / - /-	E /- / - /-	E /- / U*/-	E /- / U*/-
SD card		-	-	1	1
Integrated microphone/speaker		-/X	-/X	X/X	X/X
Mono (M) / Dual (D)		M	M	M	M
Image Sensor		Color	Color	Color	Color
Lens		L11	L22	L11	L22
Image Size		**VGA**	**VGA**	**3 Mega**	**3 Mega**
Resolution horizontal x vertical		640x480	640x480	2048x1536	2048x1536
Max. frame rate CIF/VGA/Mega		16/16/-	16/16/-	30/30/12	30/30/12
Sensitivity at 1/60 second (Lux)		1	1	1	1
Sensitivity at 1 second (Lux)		0,05	0,05	0,05	0,05
Automatic night lens switch		-	-	-	-
Storage (MB)		**64**	**64**	**128**	**128**
Internal SD card*		**-**	**-**	**X***	**X***
Video ring buffer (MB)		2	2	64	64
CIF images approx.		100	100	4,000	4,000
VGA images approx.		50	50	2,500	2,500
Mega images approx.		-	-	800	800
External audio (Line-In/Out)		-	-	-	-
Signal input pins		-	-	-	-
Signal outputs		-	-	-	-
Concealed cabling		X	X	X	X
In stock		X	-**	X	-**
Q22M Software Features					
Digital zoom (continuous)		X	X	X	X
vPTZ mode / Surround view		X / X	X / X	X / X	X / X
Additional storable views		X	X	X	X
Full image recording		X	X	X	X

	Basic Models	Web Models	IT Models	Secure Models
Software Features (All Models)				
Digital zoom (up to 8x, continuous) with panning	X***	X	X	X
Motion JPEG/MxPEG video streaming	X/X	X/X	X/X	X/X
Custom exposure windows	X	X	X	X
Video Motion detection	X	X	X	X
Time and event control (FTP, e-mail, logos)	X	X	X	X
Weekly schedules/holidays		X	X	X
Web functionality (FTP, e-mail)	X	X	X	X
Quad/MultiView in browser	X	X	X	X
Recording/Playback in browser	X	X	X	X
Logo generator, animated		X	X	X
Single image recording (pre-/post-alarm images)	3	3	10	50
Terabyte ring buffer (Win/Lin/Mac) via network			X	X
Continuous video/audio recording, 0.2 to 30 fps			X	X
Video/audio recording (event-triggered)			X	X
Event-controlled frame rate with continuous audio			X	X
Flexible event logic				X
Master/Slave arming by one camera				X
Scheduled privacy zones, several areas				X
Bidirectional audio (IP) from/to browser			X*	X*
Customized voice messages			X	X
VoIP telephony (Audio/Video, SIP)			X*	X*
Alarm calls to softphones (SIP) e.g. X-Lite			X	X
Remote alarm notification (via TCP/IP, IP Notify)			X	X
RS232 Data Logger/Terminal			X**	X**
Programming interface/HTTP API			X	X
Security features (HTTPS/SSL, IP-level access control, network authentication IEEE 802.1X)	X	X	X	X
Model Feature List				
Image size	VGA	3 Mega**	VGA	3 Mega**
Image Sensor	Color	Color	Color/BW	Color/BW
Standard lens for software version	L22*	L22*	L22*	L22*
Audio support (Microphone/Speaker)	-/S*	-/S*	M/S*	M/S*

The Web version is available only as M12 model

The Basic version is available only as D22M and Q22M model

The IT version is not available as Q22M model

***Only available for Q22M models!

*D22M IT and Secure models allow connecting an external speaker and microphone. D22M cameras do not have a microphone or speaker.

**3 MEGA resolution with 2048x1536 pixels; the B/W image sensors of the Sec-DNight versions have Mega resolution (1280x960 pixels)

**M22M/Q22M models require the CamIO or ExtIO; not available for D22M models

*M12 models are delivered with the lenses specified by the customer; Q22M models are available with an L11 or an L22 lens

1.2 The MOBOTIX Concept

In addition to the features specific to the MOBOTIX Q22M, this section contains an overview of the MOBOTIX concept, which brings many more advantages over other systems.

High-Resolution Live Video With up to 30 Frames/s

The MOBOTIX cameras deliver smooth live video with lip-synchronous live audio, yet they keep the network load to a minimum. Some analog systems may also be able to deliver this, but the quality of recording is so much higher with MOBOTIX since the cameras efficiently store the high, live-image resolution and frame rate without compromising image quality. The MOBOTIX technology thus provides for **simultaneous continuous** recording of the video from **30 cameras on one standard PC at 30 frames per second each, including audio**.

Low Bandwidth Requirements

MOBOTIX' patent-pending **MxPEG** streaming format allows fast live video with audio at extremely low network load (1 to 2 Mbps). Since the MOBOTIX camera itself detects movements in the image (and not the computer), the video sequences are only transmitted if movements occur.

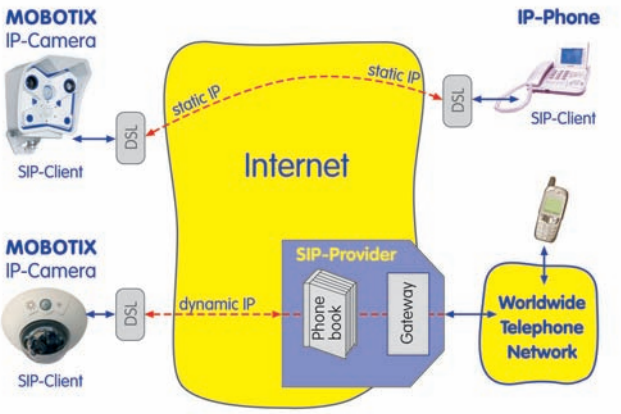
Voice over IP

Moreover, MxPEG provides for lip-synchronous live audio and two-way communication between the camera and a computer. Room surveillance is possible using a browser (Internet Explorer), **MxControlCenter** or **MxEasy**. Customized alarm notification on your mobile or via Internet telephony is just as easy as event-controlled voice messages directly from the camera.

Internet Telephony (SIP) and Video SIP

IP Telephony!

Video SIP allows establishing audio/video connections to the camera using Windows Messenger or similar applications (e.g. CounterPath X-Lite/ Eyebeam). This feature also allows remote-controlling the camera using the phone keys and the camera itself can place phone calls in case of alarms.



Storage on SD Cards

MOBOTIX cameras support the direct storage on an **internal SD card (max. 16 GB)**. By using this integrated SD card DVR, the camera has these additional applications:

SD cards up to max. 16 GB will be supported from software version 3.4.2

- **Stand-alone use of the camera** without file server thanks to **recording on the SD card**.
- **High-security application** with **recording on a file server or NAS/SAN** in which the SD card serves as storage buffer. It can thus bridge longer failures of the network or the file server without losing any video sequences (**supported in a future software version**).
- **Event downloads** from the SD card for **evaluation of the recorded sequences** on a computer.

Long-Term Storage on File Servers Included

MOBOTIX cameras feature an integrated long-term storage system on Linux, Windows and Mac OS X computers. Every camera manages its own ring buffer storage on the shared folder. This decentralized MOBOTIX concept is crucial in creating cost-efficient, high-resolution video systems since this approach drastically reduces the required network bandwidth as well as the number of IT standard components needed for managing a large number of HiRes cameras.

Event and Time-Controlled

Just like triggering event-controlled recording upon detecting movements in the image, the camera can also record when the volume detected by the microphone exceeds a certain trigger value. Using scheduled daily recording, time tasks can start or stop video recording, upload images to a web site or send e-mails with video/audio clips. Vacation times and holidays can be programmed.

Remote Alerting

In case of an alarm, MOBOTIX cameras automatically pop up windows or activate other functions at a remote security control center. The cameras can use network/wireless, GSM/GPRS/UMTS (3G) or Internet connections for this purpose.

Integrated Power-over-Ethernet

Power is supplied as **Power-over-Ethernet** via the network cabling using the MOBOTIX **Power Adapter set**, a **Netpower Rack** (8 or 20 cameras), a **Netpower Box** (4 cameras), or by using a PoE-compatible switch (according to **PoE standard IEEE 802.3af**).

No heating required—PoE is no problem even in the wintertime!

Since the MOBOTIX cameras use very little power (approx. 3 Watts) and its well-insulated plastic housing is anti-fogging, no additional heating is necessary. This is why MOBOTIX, unlike other manufacturer's cameras, have low power requirements (3 Watts) and PoE can be used every day of the year indoors as well as outdoors for supplying power.

Weatherproof

*In conjunction with Wall Mount; Q22M-Basic reaches IP54

The MOBOTIX Q22M-Secure has been certified according to IP65 and is designed for outdoor as well as indoor usage*. Since the camera does not have any moving parts, the Q22M is extremely robust, durable and resistant against heat or cold (-30 to +60°C; -20 to +140°F).

Logos, Animated or Freestyle

Logo generator

The logo generator of MOBOTIX cameras allows integrating banners and graphics (including automatically loading files from any URL) into the current camera images—with optional scheduler control. MOBOTIX cameras are the only network IP cameras supporting animated and even semi-transparent graphics (watermark).

M10-Web: Megapixel Camera with Logo Generator
multiple logos · free outline with holes · transparency · time driven
Free Contour
1280 x 960 Pixel

30 Cameras Live Using MxControlCenter

Instead of using a web browser, you can also download the free-of-charge **MxControlCenter** from **www.mobotix.com**, which allows fast displaying of up to 30 MOBOTIX cameras on one monitor (Linux and Mac OS X versions are currently being developed). In addition, MxControlCenter can process incoming alarms with sound from the cameras and allows comfortably searching and evaluating the alarm video clips (including audio). The integrated Layout Editor of MxControlCenter provides for quickly creating floor plans by simply dragging/dropping the cameras onto a background image. Load a floor plan as background image, drag&drop the cameras; done.

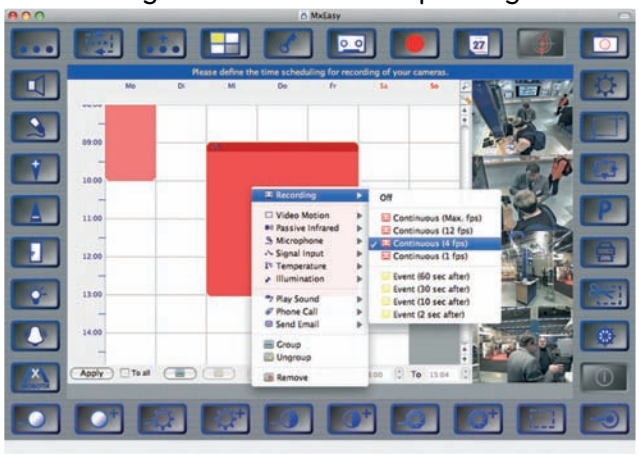
MxEasy – Intuitive Application for Windows, Macintosh and Linux

The new **MOBOTIX MxEasy** (currently in development) aims at easily operating the important camera functions thanks to its intuitive user interface, thus creating a new user experience when viewing and controlling MOBOTIX cameras. The clear design allows managing up to 16 cameras and the application can show up to four cameras at the same time.

MxEasy is currently under development

Simple usage with MxEasy

All settings changed in **MxEasy** (e.g. virtual camera position, zoom, brightness, volume, microphone sensitivity, image storage, signal outputs) are usable immediately and are stored instantly in the configuration of the corresponding camera. The **calendar tool** comprises innovative features for scheduled settings of one or more cameras. For the first time, this tool not only controls video and audio recording based on certain time and date information, but also allows activating/deactivating features like video motion detection, image brightness and the microphone based on a time schedule.



Calendar features in MxEasy

Once the first version is released, **MxEasy** will be available for MS Windows, Mac OS X and Linux/UNIX operating systems and can be downloaded free of charge from **www.mobotix.com**.

2048x1536 pixels

More Features

- **True software scaling** for easily generating smaller image formats for PDAs (such as 320x240, 160x120, etc.).
- **Audio video recording** with three different recording modes: Event recording with audio, continuous recording with variable frame rate and audio as well as event-controlled snapshot recording of JPEG images.
- **Storage failure detection** can monitor a file server (or a Flash device) and can use one or more of the defined messaging options for error notification.
- **Playback** of recorded images/video sequences with audio in the integrated video management system.
- **Multiwatcher screen** can display and monitor several cameras via the Internet, with only one camera requiring access from the outside. This "proxy" camera uses only very little bandwidth, making it an ideal solution for low-bandwidth connections.
- **MultiView** screen for displaying multiple cameras or events in one browser window.
- **Event notification** by e-mail, SMS (using a provider), voice notification (Phone Call-Out), sounds and by visual means (e.g. red frame in live image) using two separate messaging paths.
- **Object tracing** for analyzing the paths of objects that are moving in the image.
- **Time Tables** with handling of customized holidays and vacations. The time tables are used to control the camera's arming, image recording messaging, logos, the obscure image function as well as other features.
- **Remote signaling** for **master/slave** cameras, with the master camera controlling the arming status of the slave cameras. This allows arming, for example, of all slave cameras by using a key switch that is connected to the master camera.
- **Transfer profiles** for comfortably controlling transmissions via FTP, e-mail, phone calls and network messages.
- **Speaker phone*** with speak, listen and intercom modes using the integrated microphone and speaker.
- **Phone Call-In*** to remotely control the camera using a touchtone telephone (retrieve camera information, establish an Internet connection, announce the retrieved IP address, intercom feature, etc.).
- **MxPEG video compression** using **MOBOTIX MxControlCenter**. The ActiveX plug-in for Internet Explorer users brings all advantages of MxPEG to the browser-based user interface (including the audio stream to and from the camera).
- **Routing** allows using other network connections besides the standard route.

*Telephony features using VoIP connections (Internet telephony)

- **DynDNS client** for accessing the camera via the Web using a symbolic name (e.g. `mymobotixcam.dyndns.org`) although the provider is assigning a new dynamic IP address every time the camera connects to the Internet.
- Unerasable **backup operating system** that is used to restart the camera in the event that a software update has failed, allowing you to restart the update process.
- **Enhanced startup options** for the camera (obtain IP address via **DHCP**, announcement of IP address and other network data, reset to factory default settings).
- **Notifications upon errors or when rebooting** provide a method for executing one or more notifications (e.g. blinking of the camera LEDs, audio message, FTP, e-mail, phone call, network message).
- **Extended security features** protect the pages and features of the camera and prohibit unauthorized access (IP-level access control, intrusion detection). They also provide SSL-protected transmission of the video sequences and the data (using SSL encryption and X.509 certificates).

Free Software Updates

MOBOTIX provides **free-of-charge** software updates at regular intervals that improve and expand the camera's functionalities. Chapter 6, *Software Update*, in the *Software Manual* provides more information on the process.

Free-of-charge software updates from www.mobotix.com

2 MOUNTING

2.1 Preparing the Installation

Before mounting the MOBOTIX Q22M, the following questions should be answered:

1) **Where will the camera be mounted?**
   Mounting the camera to a ceiling or wall, see *section 2.1.1*
2) **Which other mounting options are available?**
   On-wall mounting, in-ceiling mounting, vandalism protection, wall mounting, pole mounting, see *section 2.1.2*.
3) **How is the camera connected to the network and how is the power supplied?**
   Network Power Adapter, Netpower Rack/Netpower Box, MxPoE or PoE-components (IEEE 802.3af), see *section 2.1.4*.
4) **How are the connections furnished from the building?**
   Wall outlets, see *section 2.1.5*.
5) **Which sections of the Mounting Instructions should I read?**
   In order to mount the Q22M with its optional accessories as quickly and efficiently as possible, you should consult the **Directions for Mounting**, see *section 2.1.6*.

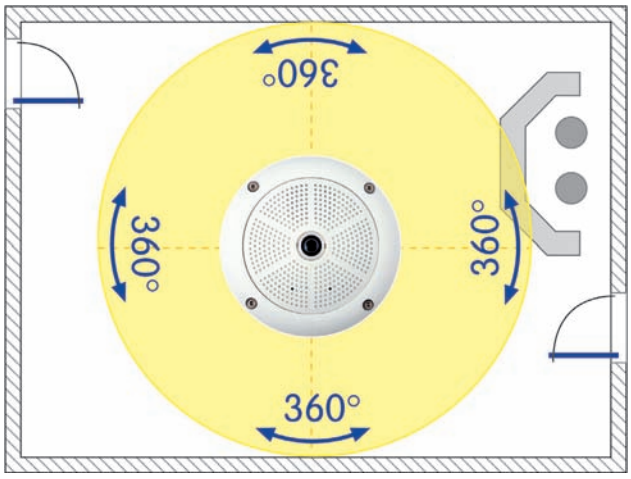
The following sections contain a brief overview for all of these questions as well as references to the relevant sections in this manual, which contain more detailed information. For more information on the MOBOTIX Q22M and the available accessories, please also refer to **www.mobotix.com**.

2.1.1 Mounting to a Ceiling or Wall

Surveillance of a complete room with only one camera

The MOBOTIX Q22M has been primarily designed to be mounted to either ceilings or walls (in combination with the Wall Mount). The supplied L11 180° lens then allows monitoring the entire room from the bottom to the ceiling. The Q22M can also be mounted directly to a wall without using the wall mount.

The cable entry of the Q22M is below the center of the camera's back plate. For more detailed information on mounting the camera, see sections 2.4 and above; the drilling templates are at the end of the manual.



360° surveillance thanks to virtual PTZ

Note

When mounting the camera to a ceiling or the Wall Mount, the camera behaves like a **ceiling camera** (the center of the image is pointing downwards). When mounting the camera to a wall, it behaves like a **wall camera** (the center of the image is pointing horizontally).

2.1.2 Mounting Options

On-wall mounting (D22M-OPT-AP)

The On-Wall set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall. In addition, the On-Wall mount provides ample space for extra modules.

On-Wall Set (IP65, suitable for outdoor applications)

On-wall mounting with 10° incline

This On-Wall set is identical to the regular On-Wall set, except that the mounted camera is inclined by 10 degrees. The incline makes it possible for the camera to deliver the best images even in demanding situations.

On-Wall Set 10° (IP65, suitable for outdoor applications; available Q4/2008)

In-ceiling mounting (D22M-OPT-IC)

The In-Ceiling set allows mounting the Q22M cameras in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since the camera only protrudes 24 mm (1 in) from the ceiling.

In-Ceiling Set

Vandalism protection (Q22M-OPT-VANDAL)

The Vandalism set provides added protection for Q22M cameras. The set consists of a robust stainless steel cover and a dome made of polycarbonate. A camera equipped with the Vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hot spots, train stations, etc.).

Vandalism Set (IP65)

Wall Mount (D22M-OPT-WH)

The Q22M/D22M Wall Mount is the ideal solution for mounting the Q22M to walls for indoor and outdoor applications. The camera is absolutely dustproof and resistant against water jets (IP65). The wall mount also covers RJ45 wall outlets and has ample space for additional modules.

Wall Mount made from sturdy PBT-30GF (IP65)

Pole Mount (D22M-OPT-MH)

Pole Mount: Outdoor quality made of 3 mm stainless steel (in conjunction with Outdoor Wall Mount)

If you would like to mount the MOBOTIX Q22M to a pole, you should consider using the MOBOTIX Pole Mount. This mount can only be used in conjunction with the wall mount. The supplied stainless steel straps allow attaching the mount to poles with diameters between 60 and 180 mm (2.4 to 7.1 in).

2.1.3 Hints for Choosing a Good Mounting Position

In order to get the most out of the MOBOTIX Q22M, you should follow these mounting hints.

360° Allround Surveillance

Image detail of 360° allround surveillance

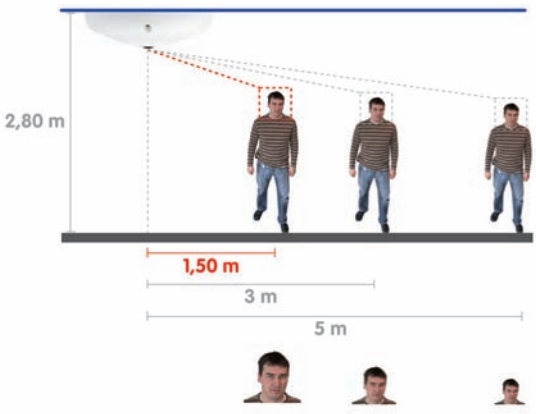
Thanks to its hemispherical lens, a single Q22M can monitor an entire room right into each of the four corners (360° Allround Surveillance). The camera's ideal position is on the ceiling in the center of the room. Due to its inherent physical and optical properties, the precision of the lens decreases as the distance from the lens grows. This means that the maximum usable image area greatly varies with the purpose of the camera. Rooms with a square floor area of up to approx. 40 m² (48 yd²) in general allow recognizing details even at the borders of the full image. If you would only like to know if persons enter a room or for monitoring specific objects, rooms with up to 100 m² (120 yd²) floor area can be monitored using a single Q22M.

The image detail (recognizability) of an object in the camera image diminishes with growing distance to the camera.

Facial Recognition

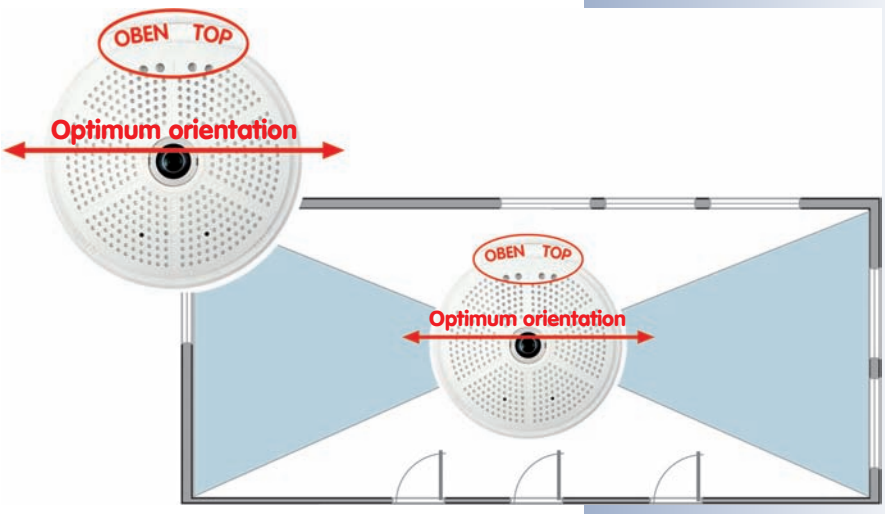
Facial recognition up to approx. 5 m (15 ft) distance

If the camera is used to detect persons and recognize their faces, the camera should be mounted at heights between 2.8 and 3 m (9.2 to 9.8 ft). Facial recognition up to 1.5 m (5 ft) distance to the object is very good and up to 3 m (9.8 ft) is still sufficient. Persons that are already known can be properly identified up to 5 m (16.4 ft) distance from the camera.



Non-Square Rooms

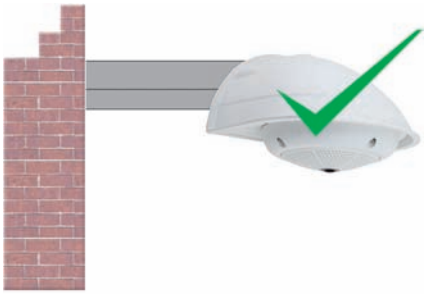
When viewing a 360° (full) image in the browser, you will notice that the top and bottom of the image is not fully visible, i.e. some image information has been clipped. This is not a fault of the camera, but an intended behavior that aims at achieving the best possible utilization of the image sensor by the camera software. Bearing this in mind, it is advisable to install a Q22M in rectangular rooms so that the arrow marked as **OBEN / TOP** points towards one of the long sides of the room as shown in the figure.



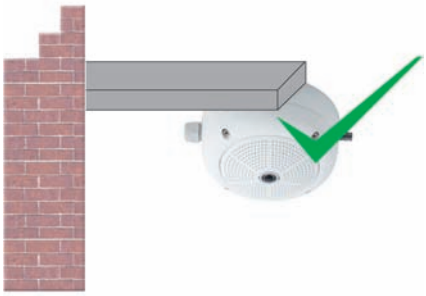
Properly align the camera in rectangular rooms!

Lowered Mounting or Mounting on Extensions

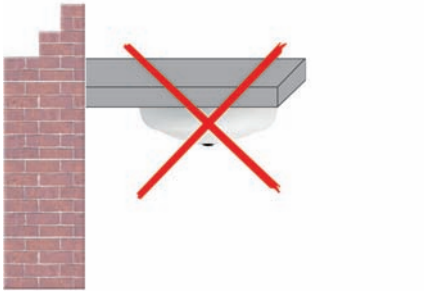
When mounting the camera in rooms with a high ceiling, it may be advisable to mount the camera in a lower position. This reduces the distance between the camera and the objects that are to be monitored, which in turn increases the recognizability of details. One practical solution would be to install the camera on a base plate attached to a suitable extension (metal tube) that is hanging from the ceiling. The network cable can be hidden from view by running through the interior of the tube.



Similar to such a lowered mounting from the ceiling, you can also attach the camera to an extension mounted to a wall to better use the 360° image of the camera (e.g. outside, above a portal). Such an installation would use the pole mount accessory (MX-D22-OPT-MH) in conjunction with the wall mount (MX-D22-OPT-WH) as a sturdy camera carrier, which is then mounted to the extension pole.



MOBOTIX recommends not to attach the camera directly to metal carriers, especially when mounting the camera outdoors or when the ambient temperature varies greatly. As an additional measure to protect the camera against condensation, you should use either the On-Wall set (MX-D22-OPT-AP) or the Wall Mount (MX-D22-OPT-WH).



Never mount the camera to metal surfaces (condensation may damage the camera)!

2.1.4 Network Connection and Power Supply, UPS

Power-over-Ethernet (MxPoE)

Power is supplied to all Q22M models via the network cabling (**MxPoE**, **Power-over-Ethernet**). For smaller installations, the universal **power supply** (*MX-SNT-E/U/GB/J/AUS01-30-RJ*) with the MOBOTIX **Network Power Adapter** *MX-NPA-3-RJ* is sufficient. Larger installations would benefit from one or more MOBOTIX **Network Power Racks/Boxes** that are available for supplying power to 4, 8 or 20 cameras (*MX-NPR-4*, *-8* or *-20*).

See section 2.12, *Camera Accessories*, for more information on these and other items or open **www.mobotix.com** (**Products > Accessories** section).

MX-NPA-3-RJ: Easy installation for smaller systems

MX-NPR-4: For mounting in wiring cupboards; includes DIN rail clip

MX-NPR-8/20: 19" rack mount (2 rack units)

The Q22M supports the MOBOTIX PoE products for power injection into the network cabling (MxPoE) and the Power-over-Ethernet standard IEEE 802.3af (PoE)

Network Power Adapter
MX-NPA-3-RJ

Netpower-Box
MX-NPR-4

Netpower-Rack
MX-NPR-20

Advantages of MOBOTIX PoE Products

- Zero maintenance and durable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails using supplied adapter (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

Caution

The **maximum length** of the network cable for remotely supplying power is **100 m (300 ft)**.

Power-over-Ethernet (PoE according to IEEE 802.3af)

Besides **MOBOTIX MxPoE**, the MOBOTIX Q22M also supports the **Power-over-Ethernet standard IEEE 802.3af**. You can hence use switches or routers that support the PoE (Power-over-Ethernet) standard IEEE 802.3af.

Note

If you are using **Power-over-Ethernet (IEEE 802.3af) network components** for supplying power to the MOBOTIX Q22M, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased and the life cycle of the PoE components is expanded.

PoE components without fans increase overall reliability of the entire system

Sections 3.2 ff contain more information on the possible combinations of connecting the Q22M and power supply options.

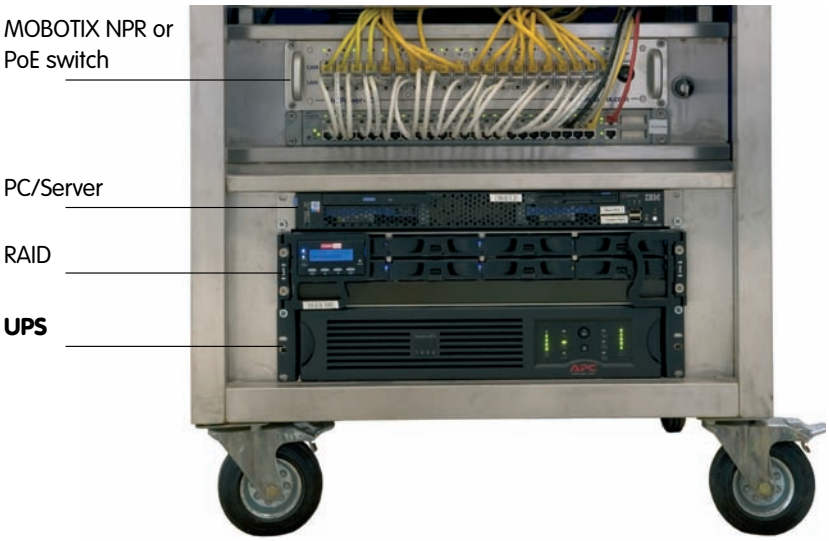
Using Uninterruptible Power Supplies (UPS)

In order to maintain a continuous power supply even when utility power fails, you should install an **uninterruptible power supply (UPS)**. These devices also provide full protection against electrical surges and voltage fluctuations and thus enhance the reliability of the system as a whole.

UPS not only protect the camera against power failures, they also protect all other connected network devices against damage from voltage peaks and lows

When using a more powerful 19" rack-mounted USP, you can also protect all other network components (e.g. switches, routers, PoE switches, etc.).

Since MOBOTIX cameras do not require any heating even in the wintertime, the power consumption of 3 W is very low. This in turn means that you can centralize the USP-protected power supply by injecting power into the network cables (max. 100 m/300 ft). This kind of protected power supply can be used either with MOBOTIX MxPoE products (MX-NPA-3-RJ + external power supply or MX-NPR-4/8/20) or with PoE-compliant switches according to IEEE 802.3af.



19" system with UPS

2.1.5 Providing the Camera Connections, Wall Outlets

Once the camera position, the position of the cable outlets and the method of power supply have been decided upon, the cabling can be installed. Before mounting the MOBOTIX Q22M, you should make sure that the network connections have been properly tested, so that the proper functioning of the camera is guaranteed.

Please read section 2.11.2, *Wiring, Fire Prevention, Lightning and Surge Protection* for more important information.

2.1.6 Directions for Mounting

Once the type of installation, the camera connections, the power supply and the mounting options have been decided upon, you should follow the directions listed below. This ensures that you only have to read the relevant sections of this chapter, which will speed up installing the Q22M.

Directions for Mounting	
Preparatory Tasks	**Sections**
Q22M	**Sections**
Type of Installation	**Sections**
Mounting to a Ceiling	**2.2** *Q22M: Delivered Parts, Components and Dim.* **2.4** *Mounting the Camera Without Add. Options*
Mounting to Walls with the On-Wall Set	**2.2** *Q22M: Delivered Parts, Components and Dim.* **2.3.1** *On-Wall Set* **2.5** *Mounting with the On-Wall Set*
Mounting to Ceilings with the Ceiling Set	**2.2** *Q22M: Delivered Parts, Components and Dim.* **2.3.2** *In-Ceiling Set* **2.6** *Mounting the In-Ceiling Set*
Mounting the Vandalism Set	**2.2** *Q22M: Delivered Parts, Components and Dim.* **2.3.3** *Vandalism Set* **2.4** *Mounting the Camera Without Add. Options* **2.7** *Mounting the Vandalism Set*
Mounting to Walls Using the \ Mount	**2.2** *Q22M: Delivered Parts, Components and Dim.* **2.3.4** *Wall Mount* **2.8** *Mounting With the Wall Mount*
Mounting to Poles	**2.2** *Q22M: Delivered Parts, Components and Dim.* **2.3.4** *Wall Mount* **2.3.5** *Pole Mount* **2.8** *Mounting With the Wall Mount*
Final Tasks	**Sections**
All camera variants (except Vandalism Set)	**2.9** *Finishing the Mounting Process*

Additional mounting options

2.2 Q22M: Delivered Parts, Components and Dimensions

2.2.1 Delivered Parts and Camera Components

Make sure to check the delivered parts!

Camera housing (item 1.1) with mounting ring (item 1.1)
4 wood screws 4.5x60 mm (item 1.13)
4 dowels 8 mm (item 1.11)
4 washers Ø 5.3 mm (item 1.12)
Lens wrench (item 1.3)
Lens (item 1.2)
Outer shell (item 1.9)
∅ 160 mm/6.3 in
SD card (item 1.4)
4 Allen screws M4x16 mm (item 1.14)
4 washers Ø 4.3 mm (item 1.15)
Allen wrench 3 mm (item 1.6)
Allen wrench 2 mm (item 1.7)
Torx wrench (item 1.8)
Ethernet cable (item 1.5)

Item	Count	Part Name
1.1	1	Camera housing
1.2	1	Lens
1.3	1	Lens wrench
1.4	1	SD Card, pre-installed
1.5	1	Ethernet cable CAT5 0.3 m/20", installed
1.6	1	Allen wrench 3 mm
1.7	1	Allen wrench 2 mm
1.8	1	Toothed wrench
1.9	1	Outer shell
1.10	1	Mounting ring
1.11	4	Dowels 8 mm
1.12	4	Stainless steel washers Ø 5.3 mm
1.13	4	Stainless steel wood screws with Torx head 4.5x60 mm
1.14	4	Stainless steel Allen screws M4x16 mm
1.15	4	Stainless steel washers Ø 4.3 mm

2.2.2 Camera Housing and Connectors

The MOBOTIX Q22M consists of the camera housing (motherboard and lens), the outer shell and the mounting ring.

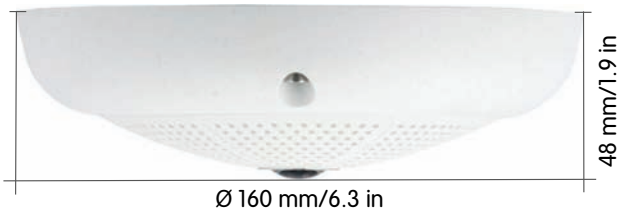
SD cards will be supported from software version 3.4.2 (except Q22M-Basic)

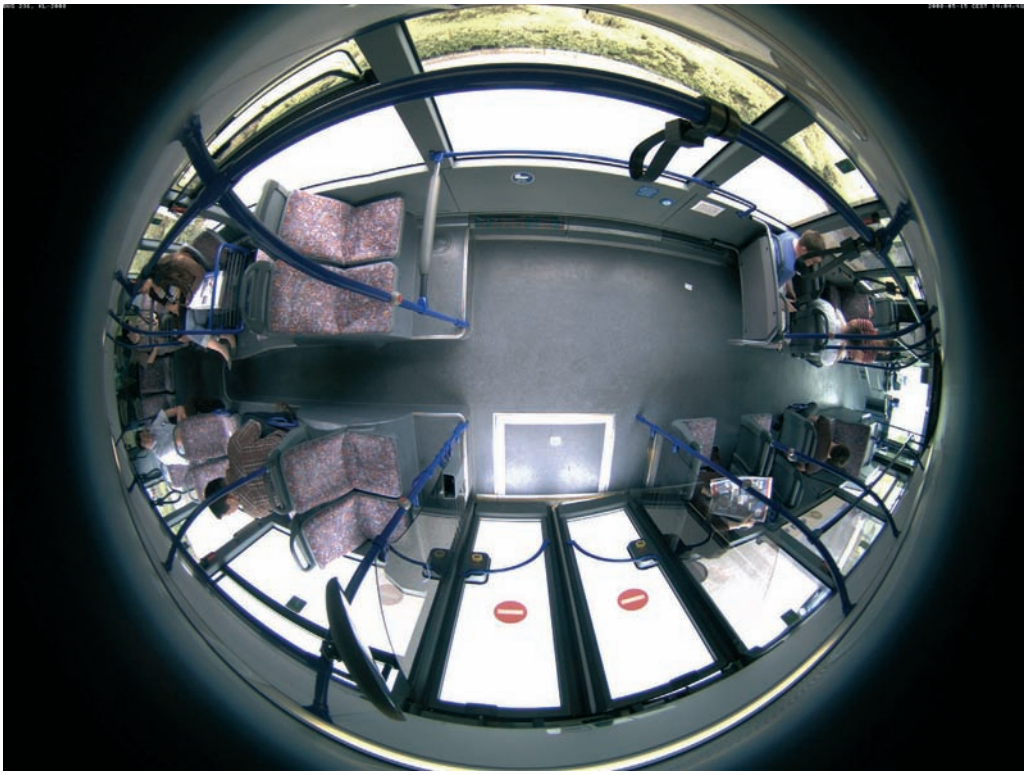
Connection

- NET (Ethernet network/power supply)

Connection

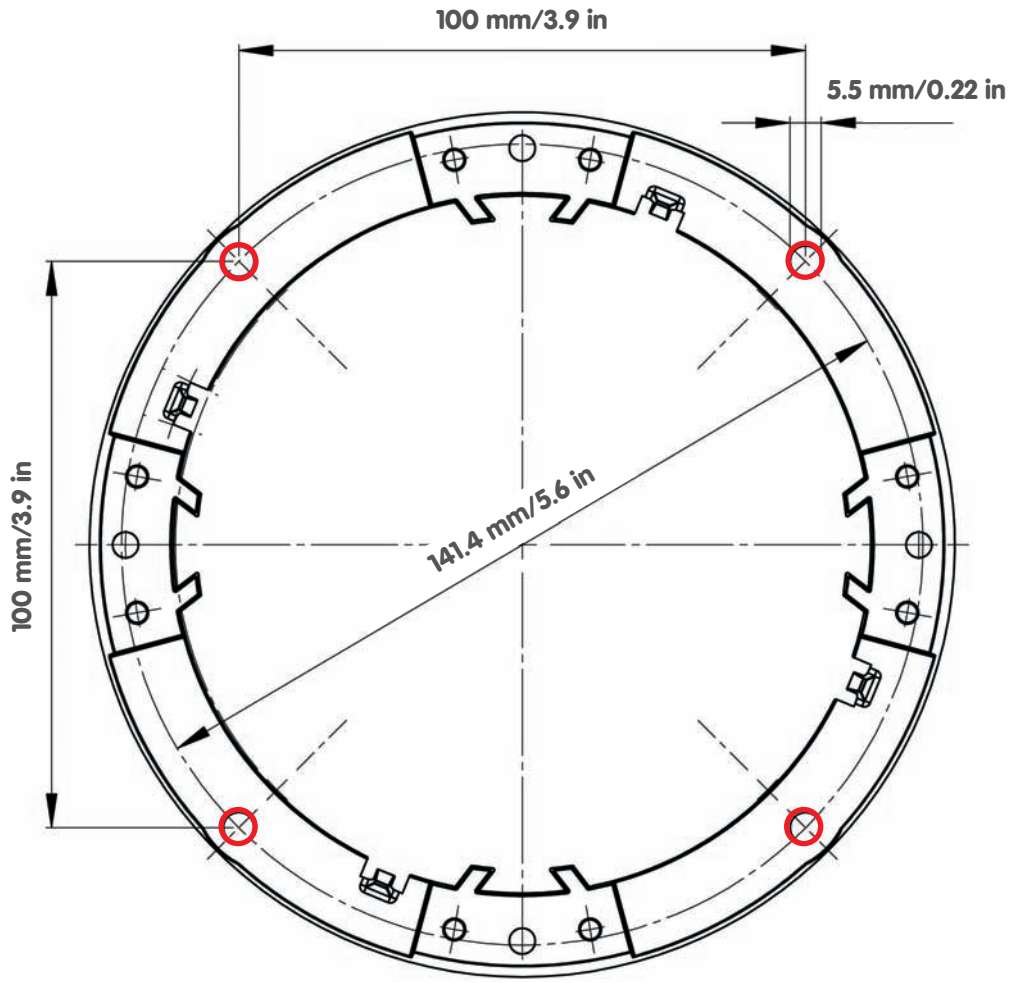
2.2.3 Q22M: Dimensions Without Mounting Options





Mobile Q22M application in a bus: Full image (QXGA, uncorrected) of the rear exit

Drilling Template Mounting Ring



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled or adjusted to the paper size when printing the PDF file.

2.3 Camera Accessories: Delivered Parts, Components and Dimensions

2.3.1 On-Wall Set

The MOBOTIX camera is not included in the delivery of the On-Wall set!

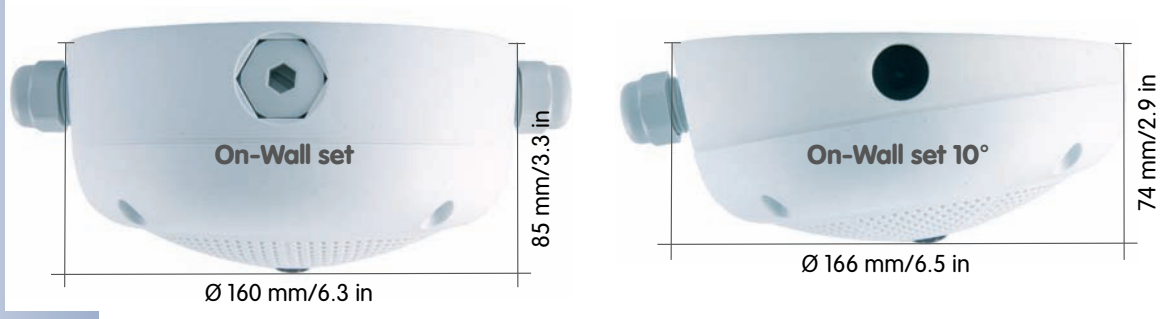
Housing (item 2.1)

4 Allen screws M4x35 mm (item 2.2)
4 washers Ø 4.3 mm (item 2.3)

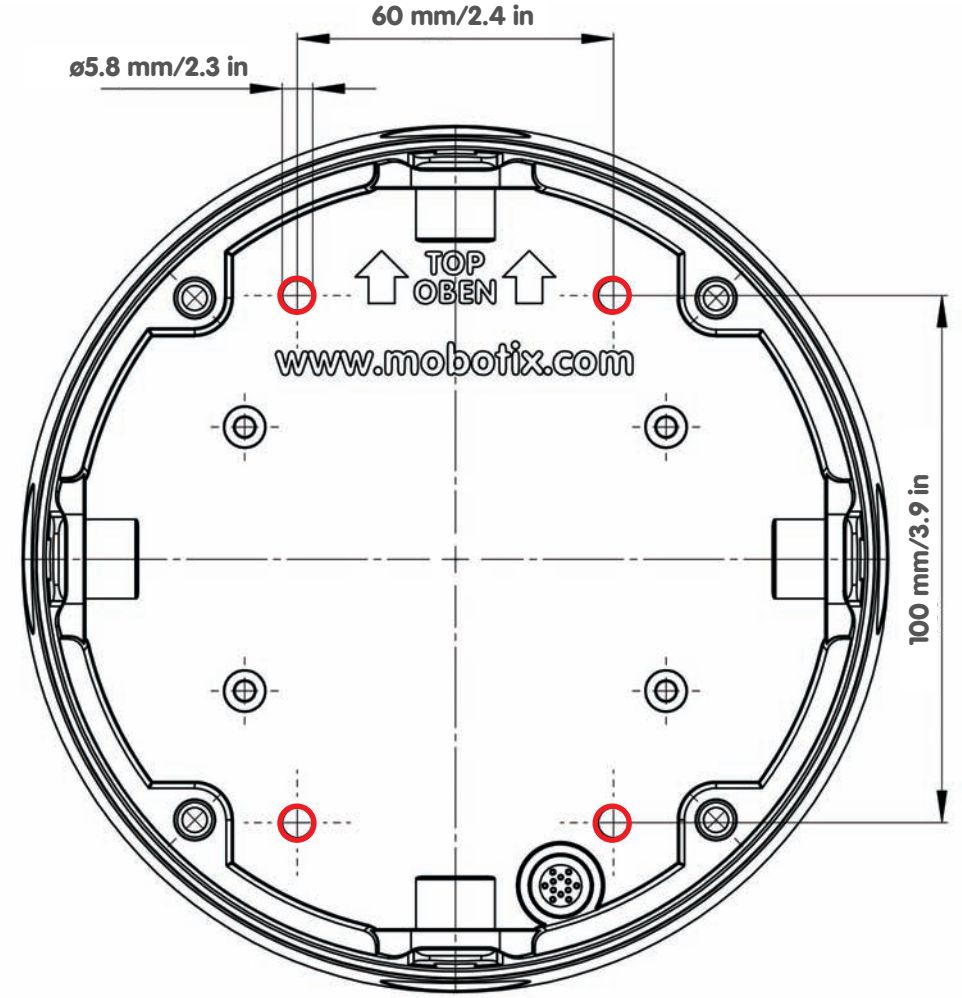
Item	Count	Part Name
2.1	1	On-Wall set housing
2.2	4	Stainless steel Allen screws M4x35 mm
2.3	4	Stainless steel washers Ø 4.3 mm

The On-Wall set can be used for all Q22M and D22M models

Dimensions



Drilling Template On-Wall Set



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

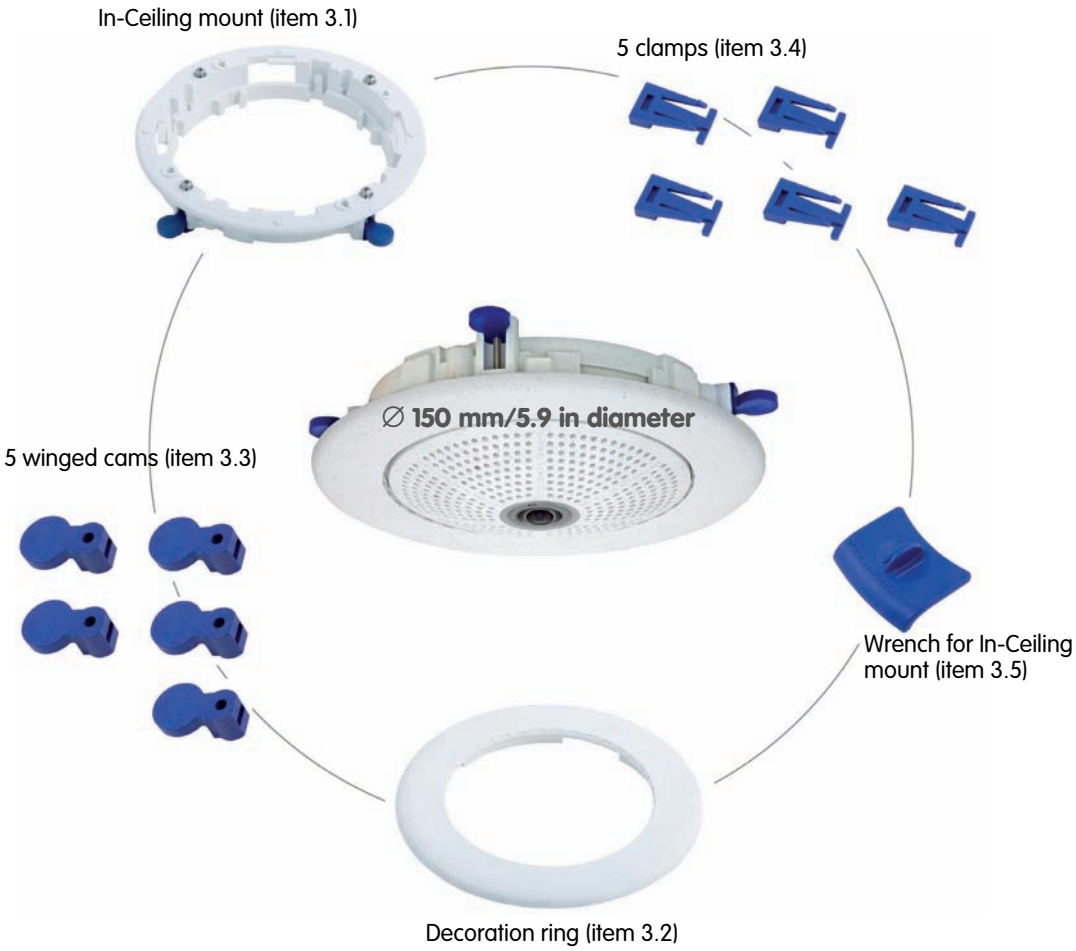
Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled or adjusted to the paper size when printing the PDF file.

2.3.2 In-Ceiling Set

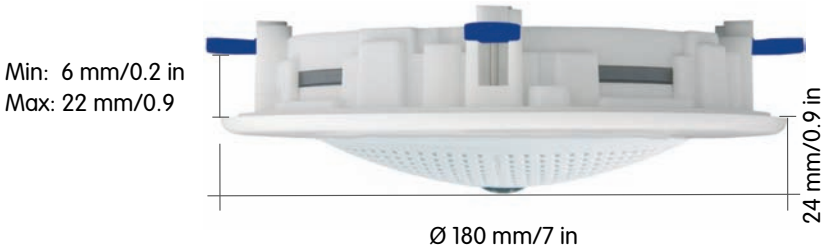
The MOBOTIX camera is not included in the delivery of the In-Ceiling set!


In-Ceiling mount (item 3.1)
5 clamps (item 3.4)
∅ 150 mm/5.9 in diameter
5 winged cams (item 3.3)
Wrench for In-Ceiling mount (item 3.5)
Decoration ring (item 3.2)

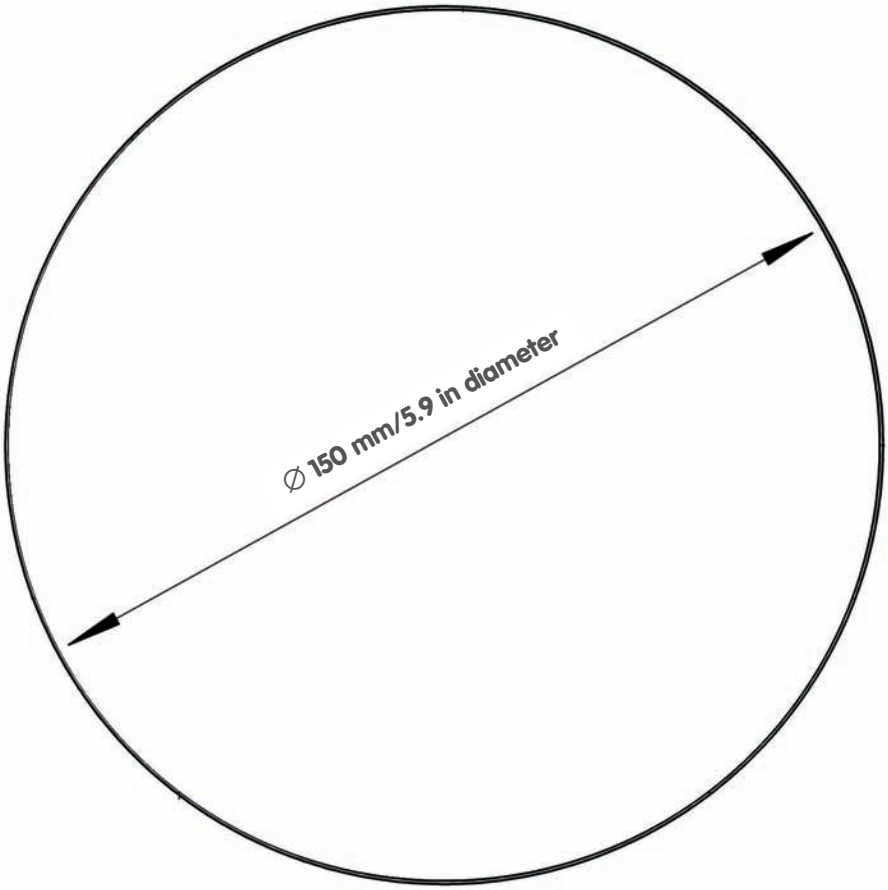
The In-Ceiling set can be used for all Q22M and D22M models

Item	Count	Part Name
3.1	1	In-Ceiling set
3.2	1	Decoration ring
3.3	5	Winged cam
3.4	5	Clamps
3.5	2	Wrench for In-Ceiling mount

Dimensions



Cutting Template In-Ceiling Set



Find the cutting template (scale 1:1) at the end of the manual as a fold-out

Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled or adjusted to the paper size when printing the PDF file.

2.3.3 Vandalism Set

4 security screws (item 4.3)
Stainless steel cover (item 4.1)
∅ 160mm/6.3 in
Dome (item 4.5)
4 spacers (item 4.2)
Two-hole driver bit (item 4.4)

The MOBOTIX camera is not included in the delivery of the Vandalism set!

Item	Count	Part Name
4.1	1	Stainless steel cover 2 mm stainless steel
4.2	4	Spacers for Vandalism set
4.3	4	Security screws M4x16 mm
4.4	1	Two-hole driver bit for security screws
4.5	1	Polycarbonate dome
4.6	1	Dome wrench

Dimensions

Variants

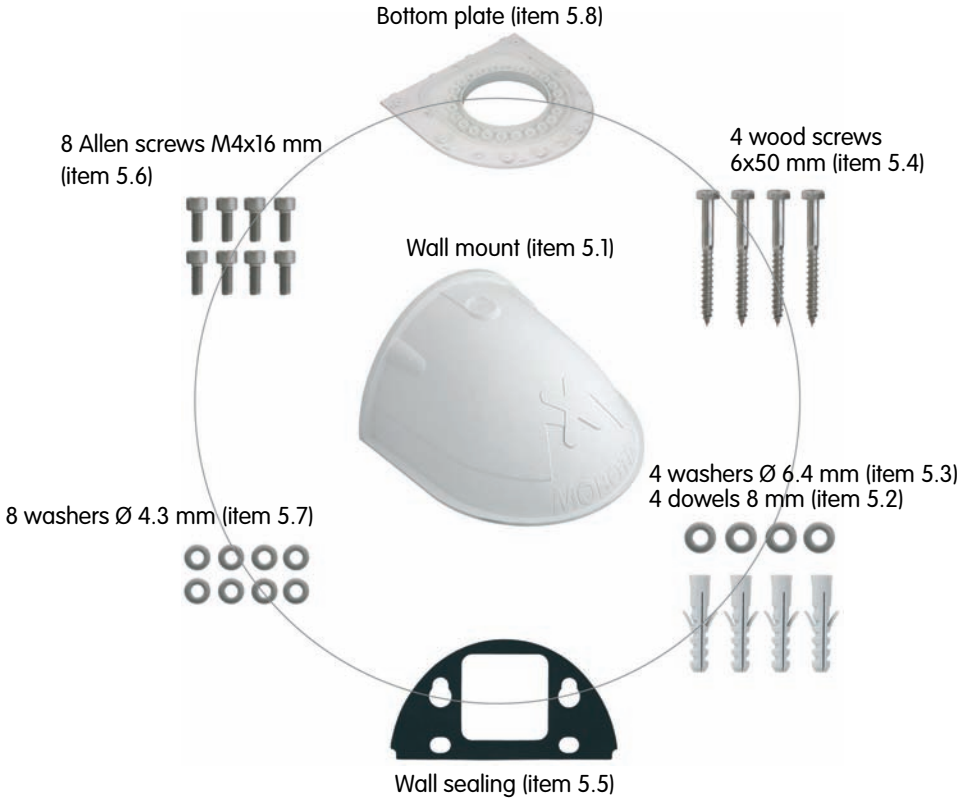
The Q22M Vandalism set provides added protection for Q22M cameras. The set consists of a robust stainless steel cover, a dome made of polycarbonate and security screws. A camera equipped with the Vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hot spots, train stations, etc.).

You can order the Vandalism set in these variants:

Stainless steel, polished

Stainless steel, matt

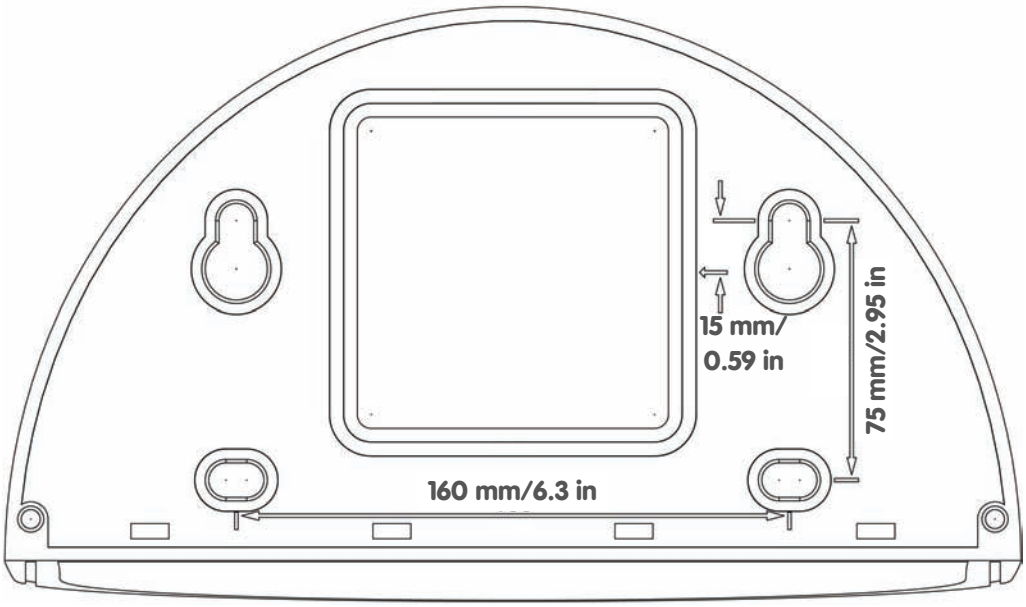
2.3.4 Wall Mount


Bottom plate (item 5.8)
8 Allen screws M4x16 mm (item 5.6)
4 wood screws 6x50 mm (item 5.4)
Wall mount (item 5.1)
4 washers Ø 6.4 mm (item 5.3)
4 dowels 8 mm (item 5.2)
8 washers Ø 4.3 mm (item 5.7)
Wall sealing (item 5.5)

Item	Count	Part Name
5.1	1	Wall Mount
5.2	4	Dowels 8 mm
5.3	4	Stainless steel washers Ø 6.4 mm
5.4	4	Stainless steel wood screws with hex head 6x50 mm
5.5	1	Wall sealing
5.6	8	Stainless steel Allen screws M4x16 mm
5.7	8	Stainless steel washers Ø 4.3 mm
5.8	1	Bottom plate

The Wall Mount can be used for all Q22M and D22M models

Drilling Template Wall Mount



Find the drilling templates (scale 1:1) at the end of the manual as a fold-out

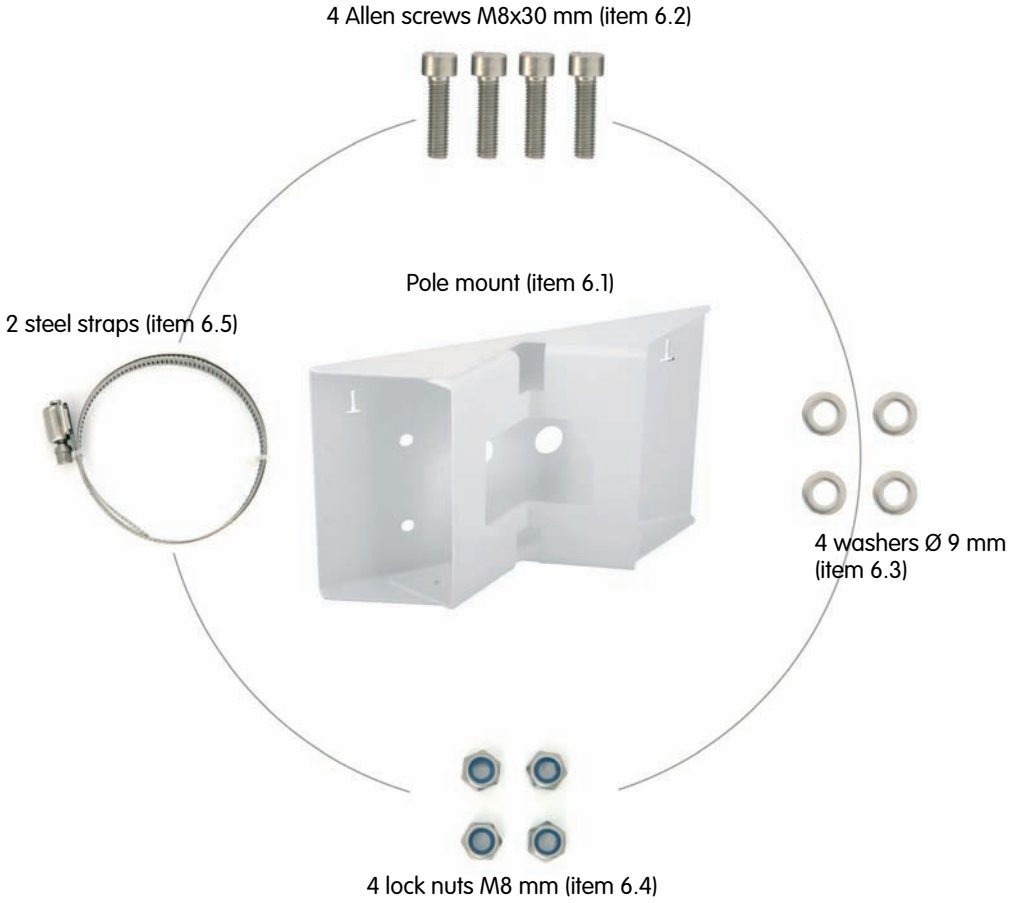
Note

Find the folded drilling template at the end of the manual.

Make sure that the drilling template is not scaled or adjusted to the paper size when printing the PDF file.

2.3.5 Pole Mount

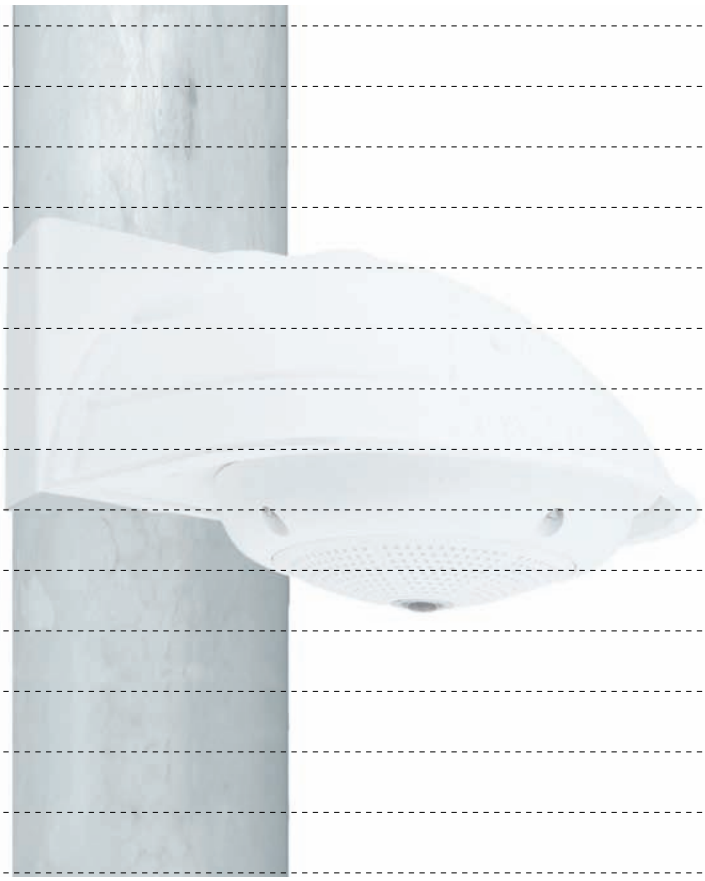
The Pole Mount can only be used in conjunction with the Wall Mount



Item	Count	Part Name
6.1	1	Pole Mount, stainless steel 3 mm, white powder-coated
6.2	4	Stainless steel Allen screws M8x30 mm
6.3	4	Stainless steel washers Ø 9 mm
6.4	4	Stainless steel lock nuts M8
6.5	2	Stainless steel straps

The Pole Mount can be used for all Q22M and Q22M models

Notes:



2.4 Mounting the Camera Without Additional Mounting Options

1) **Prepare the network connection:** The network cabling is supplied from directly behind the camera in the center of the housing. The cabling is perfectly protected and cannot be seen or damaged.

Note

Use a flush-mounted (empty) wall outlet for the network cabling. The camera itself cannot be mounted directly on top of protruding wall outlets.

Find the folded drilling template for the mounting ring of the camera at the end of the manual!

2) **Drill the holes:** Drill the holes for the supplied dowels. Use the supplied drilling template for the camera mounting ring (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

3) **Remove the outer shell:** Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

4) **Connect the cable:** Connect the network cable to the network cable of the camera using a patch cable connector.

5) **Mount the camera with the mounting ring:** Use the delivered screws to affix the mounting ring and the camera at the designated position. Make sure that the **OBEN / TOP** arrow points into the desired direction.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the back of the housing from moisture entering the camera. All openings at the back of the camera housing except the pressure equalization element need to be sealed off properly. This will ensure that the camera remains weatherproof.

6) **Establish a connection to the camera, check the image:** Establish a connection to the camera as described in section 3.3, *The First Camera Image and the Most Important Settings*. Make sure that you see the live image of the camera on the monitor of your computer or laptop. Check the image on a computer monitor.

Continue with section 2.9, *Finishing the Mounting Process*.

2.5 Mounting With the On-Wall Set

Find the folded drilling template of the On-Wall set at the end of the manual!

1) **Prepare the network connection:** You can use any one of the four openings in the On-Wall set to guide the cabling into the camera. When using the On-Wall set, you cannot mount it directly on top of a protruding wall outlet.
2) **Drill the holes:** Drill the holes for the supplied dowels. Use the supplied drilling template for the On-Wall set (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Caution

Note that the On-Wall set can also be used in outdoor scenarios when mounted to a ceiling (IP65). Make sure that the holes at the back of the housing are sealed off using silicone.

Note

When mounting the MOBOTIX Q22M to a wall, you should always use the Wall Mount instead of the On-Wall set.

Seal off the holes at the back of the camera with silicone!

Keep the pressure equalization element open!!

3) **Apply silicone:** Before mounting the set, apply some silicone around each hole to prevent water from entering the housing. Make sure that the **back of the pressure equalization element** is **not** sealed off by silicone!

4) **Mount the On-Wall set:** Use the delivered screws to mount the On-Wall set (without the camera) at the designated position.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

5) **Prepare the cabling:** Guide the cable into the inside of the On-Wall set.

6) **Remove the outer shell:** Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

7) **Remove the mounting ring:** Disengage the mounting ring from the housing of the camera. This ring is not required when mounting the camera to the On-Wall set.

8) **Connect the cable:** Connect the network cable to the network cable of the camera using a patch cable connector. Cable that is too long can be stored easily within the On-Wall mount.

9) **Attach the camera to the mount:** Now press the camera into the guides of the On-Wall mount. The tapered guides on the back of the camera housing fit exactly into the openings of the On-Wall mount. Make sure that the **OBEN / TOP** arrow points into the desired direction.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

Continue with section 2.9, *Finishing the Mounting Process*.

2.6 Mounting to a Ceiling Using the In-Ceiling Set

Find the cutting template at the end of the manual

1) **Prepare the network connection:** Prepare the network connection by guiding the network cable above the ceiling. Make sure that you still have enough free cable available.

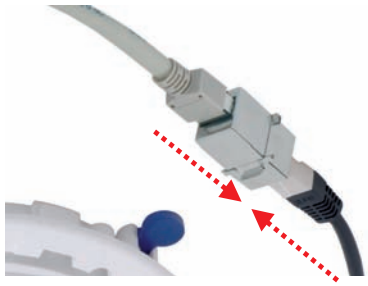
2) **Prepare the camera hole:** Cut the hole for the camera. Use the supplied cutting template of the In-Ceiling set at the end of the manual!

3) **Remove the outer shell:** Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

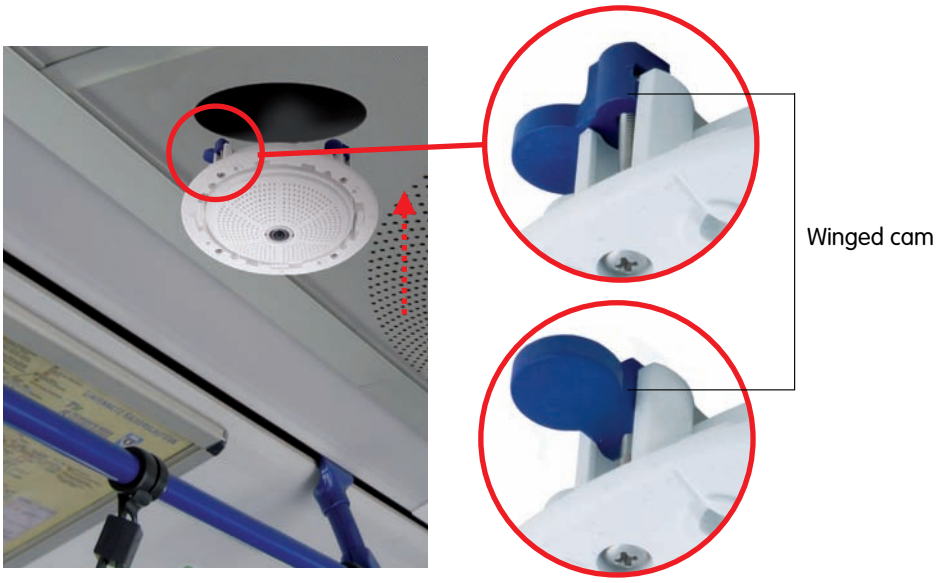
4) **Remove the mounting ring:** Disengage the mounting ring from the housing of the camera. This ring is not required when mounting the camera to the In-Ceiling set.

5) **Attach the camera to the In-Ceiling set:** Insert the camera into the In-Ceiling set. The tapered guides on the back of the camera housing fit exactly into the openings of the In-Ceiling set.

6) **Connect the cable:** Connect the network cable to the network cable of the camera using a patch cable connector.



7) **Insert the camera and the In-Ceiling set into the hole:** Make sure that all winged cams are retracted and push the In-Ceiling set with the camera into the hole. Make sure that the **OBEN / TOP** arrow points into the desired direction. Tightening the screws of the In-Ceiling set extends the winged cams, thus firmly holding the set in place.



The winged cams automatically secure the In-Ceiling Set in the ceiling when tightening the screws (see detail pictures)

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

8) **Mount the decoration ring:** Use the two **wrenches for the In-Ceiling mount**, place the ring on the set as shown in the figure and turn the ring clockwise until it stops.

Mounting with the In-Ceiling wrenches

Dismounting

1) Use the two **wrenches for the In-Ceiling mount** included in the delivery to dismount the decoration ring. Insert the wrenches as shown and turn the ring counter-clockwise.

Unmounting with the In-Ceiling wrenches

2) Loosen the screws of the In-Ceiling set (this will automatically retract the winged cams). You can now remove the In-Ceiling set with the attached camera from the ceiling.

2.7 Mounting the Vandalism Set

In order to install the Vandalism set, replace the regular outer shell and the Allen screws by the stainless steel cover, the security screws and the four spacers of the Vandalism set.

1) **Remove the outer shell:** Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

2) **Remove the lens gasket:** Remove the lens using the lens wrench and **remove the lens gasket**.

3) **Insert the lens:** Insert the lens and tighten it using the lens wrench, then adjust image sharpness while checking the live image on a computer monitor.

4) **Clean the lens:** If required, clean the lens gently using a lint-free cotton cloth. Do not apply excessive pressure onto the glass surface when cleaning the lens.

5) **Mount the dome:** Use the supplied wrench and mount the dome by turning it clockwise. If required, clean the dome gently using a lint-free cotton cloth before finishing the installation. Check the focus of the live image again and re-adjust the focus, if required.

6) **Mount the spacers:** Now press the **four spacers** onto the mounting ring.

Spacers for Vandalism Set

7) **Mount the stainless steel cover:** Place the stainless steel cover onto the camera as shown and use the supplied two-hole driver bit to firmly tighten the security screws.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

Security screw and two-hole driver bit

Mounting the Vandalism set has been completed successfully.

2.8 Mounting to a Wall Using the Wall Mount

Find the folded drilling template for the Wall Mount of the camera at the end of the manual!

1) **Prepare the network connection:** The network cabling is supplied through the opening in the back of the wall mount. The cabling is perfectly protected and cannot be seen or damaged. The Wall Mount can be mounted directly on top of wall outlets (flush-mounted or above-the-wall types; maximum dimensions of the outlet 88 x 80 mm (3.5 x 3.2 in) width x height).

2) **Drill the holes:** Drill the holes for the supplied dowels. Use the supplied drilling template for the Wall Mount (fold-out at the end of this manual) to mark the position for drilling the dowel holes and the holes through which the cables will be led later on.

Caution

Only use the factory pre-installed network cable of the MOBOTIX camera. It is very important that the rubber plug of the network cable reliably protects the back of the housing from moisture entering the camera. All openings at the back of the camera housing except the pressure equalization element need to be sealed off properly. This will ensure that the camera remains weatherproof.

3) **Remove the outer shell:** Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

4) **Remove the mounting ring:** Disengage the mounting ring from the housing of the camera. This ring is not required when mounting the camera to the Wall Mount.

Maximum torque for these screws is 4 Nm (2.95 lbf ft)

5) **Mount the Wall Mount (without camera):** Use the delivered screws to mount the Wall Mount (without the camera) at the designated position.

6) **Connect the cable:** Connect the network cable to the network cable of the camera using a patch cable connector. Cable that is too long can be stored easily within the Wall Mount.

7) **Attach the camera to the mount:** Now press the camera into the guides of the Wall Mount. The tapered guides on the back of the camera housing fit exactly into the openings of the Wall Mount. Make sure that the **OBEN / TOP** arrow points into the desired direction.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

Continue with section 2.9, *Finishing the Mounting Process*.

2.9 Finishing the Mounting Process

1) **Establish a connection to the camera, check the image:** Establish a connection to the camera as described in section 3.3, *The First Camera Image and the Most Important Settings*. Make sure that you see the live image of the camera on the monitor of your computer or laptop. Check the image on a computer monitor.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

2) **Attach the outer shell:** Place the outer shell onto the camera and tighten all four Allen screws using the supplied Allen wrench.

3) **Clean the lens:** If required, clean the lens gently using a lint-free cotton cloth. Do not apply excessive pressure onto the glass surface when cleaning the lens.

2.10 Operating the MOBOTIX Q22M-Secure With SD Card

If you would like to remove, insert or exchange the SD card, you need to dismantle the camera. In order to avoid loss of data, you need to make sure that you deactivate SD card recording and reboot the MOBOTIX camera before removing the card.

Caution

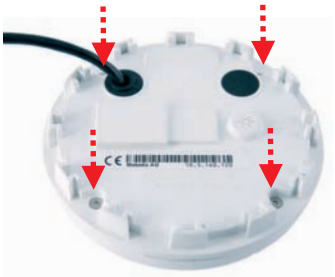
An SD card may only be removed from the camera after you have deactivated *Recording to SD Card* and rebooted the camera. Failing to do so may lead to loss of data!

2.10.1 Removing an SD Card

1) **Deactivate recording:** Make sure that recording on SD card has been deactivated in **Admin Menu > Storage on External File Server / Flash Device**. If SD card recording is still active, deactivate the recording and reboot the camera. Section 3.5, *SD Card Recording*, contains more information on this topic.

2) **Remove the outer shell:** Remove all four Allen screws using the supplied Allen wrench. Take off the outer shell.

3) **Remove the back plate:** Remove the screws of the back plate using the supplied 2 mm Allen wrench and lift off the back plate. Be careful not to damage the connector inside the camera housing.



Only remove the SD card from the camera after you have deactivated **SD Card Recording** and re-booted the camera!

Open **Admin Menu > Storage on External File Server / Flash Device** to deactivate the recording on an SD card

4) **Remove the SD card:** Gently push the SD card into the card slot. The card is released from the slot and can be removed from the camera.

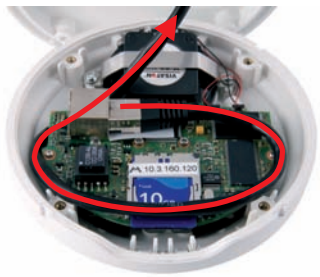
If you would like to use the camera without SD card, continue with step 2 in section 2.10.2, *Inserting an SD Card*.

2.10.2 Inserting an SD Card

If the camera already contains an SD card, execute steps 2 and 3 in section 2.10.1, *Removing an SD Card*, first.

1) **Insert the SD card:** Insert the SD card as shown until you feel the card lock in place. The card is now fully inserted in the card slot.

2) **Mount the back plate:** Place the back plate on the housing and make sure that the holes for the screws align with the thread inserts and that the network cable runs along the arrow as shown in the figure.



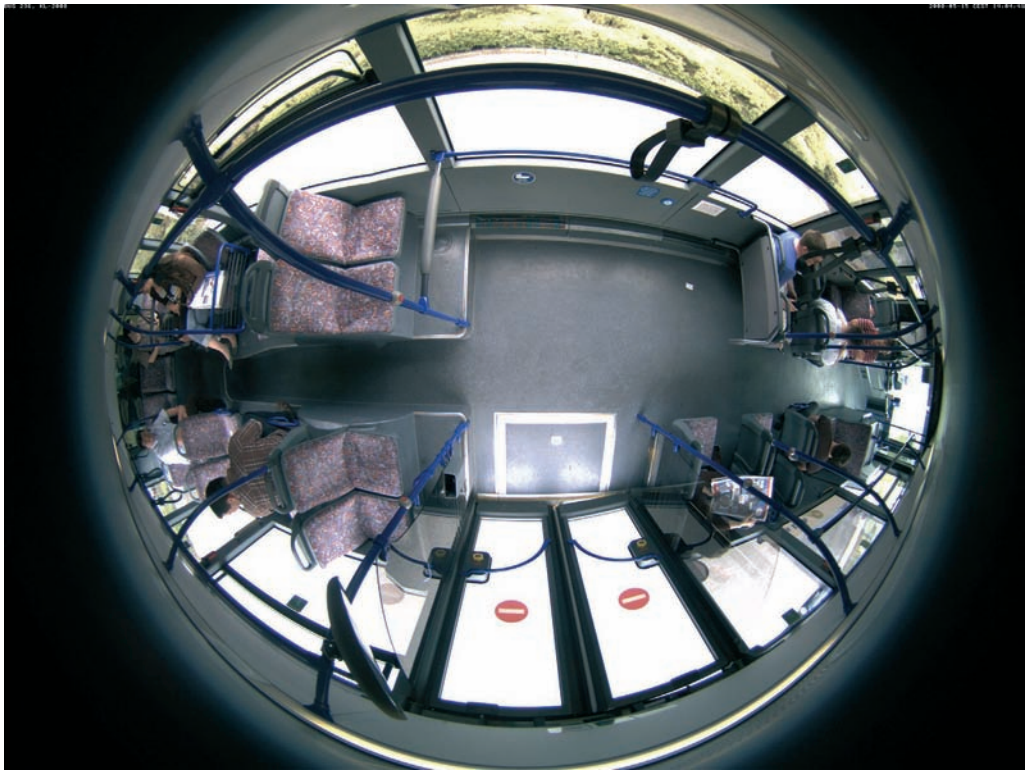
3) **Tighten the back plate:** Place the four Allen screws back into the back plate and tighten the screws using the supplied 2 mm Allen wrench.

4) **Attach the outer shell:** Place the outer shell onto the camera and tighten all four Allen screws using the supplied Allen wrench.

Maximum torque for all screws is 1 to 1.2 Nm (0.74 lbf ft)

5) **Activate recording:** If you have inserted an SD card that has already been **MxFFS**-formatted, you can activate the recording in **Admin Menu > Storage on External File Server / Flash Device**. Once the camera has been re-booted, it automatically activates recording.

   If you have inserted a new SD card, you need to format it first as described in section 3.5, *SD Card Recording*.



Mobile Q22M application in a bus: Full image storage (QXGA) on 16 GB SD card

2.11 Notes

2.11.1 Cleaning Instructions

Cleaning the Lens

If the lens is dirty from the installation process, clean the lens using a lint-free cotton cloth. Make sure that the lens is still in focus after cleaning and adjust the lens' focus if required.

Cleaning the Dome

- In order to protect the dome from being scratched and from getting dirty, only handle the dome using a soft cotton cloth or the protective plastic of the camera's shipping box.
- You should clean the dome at regular intervals. Always use a lint-free cotton cloth for this purpose.
- If the dirt is more persistent, add a mild alcohol-free detergent without abrasive particles.
- Make sure you instruct cleaning personnel on how to clean the camera.

2.11.2 Wiring, Fire Prevention, Lightning and Surge Protection

When installing the wiring inside or outside of buildings, make sure you always adhere to the relevant regulations on wiring, fire prevention and protection against lightning.

MOBOTIX recommends having MOBOTIX cameras installed only by certified specialists accustomed to installing network devices and having proper respect for the applicable regulations regarding **lightning protection** and **fire prevention** as well as the current technology for preventing damages from electrical surges.

More information is available at an institution such as the **International Electrotechnical Commission** (IEC, **www.iec.ch**) or at a manufacturer of protection devices against lightning and electrical surges, such as Dehn (**www.dehn.de**).

Wiring

When installing the wiring, make sure to follow these guidelines:

Use double-shielded CAT5-/CAT7 cable!

- **Data cable:** Make sure you only use double-shielded CAT 5/7 cable (**S/STP**) for Ethernet connections.

- **Outdoors:** Installing the camera outdoors requires special precautions and measures regarding the cables as well as lightning and surge protection (see further below in this section).
- **Wire lengths:** The cable segments must not exceed the maximum allowed cable lengths in order to ensure proper data transfer (see section 3.3, *Connecting the Camera, Power Supply*).

- **Avoiding induction:** When running data cables parallel to existing regular power lines or high-voltage wires, make sure you observe the minimum distances to the power cables.

Fire Prevention

When installing the power lines to the camera, make sure you always adhere to the relevant regulations on wiring and fire prevention at the site of the installation.

Make sure to follow these important instructions!

Lightning and Surge Protection

To prevent damage from lightning and power surges, make sure you follow these guidelines:

- **Lightning conductors:** In areas exposed to lightning (e.g. on roofs), a distance holder (1 m (3 ft) above and away from the camera) and proper lightning conductors need to be installed in order to prevent lightning strikes into the camera and to ensure that the energy of a lightning strike is properly led to the ground.
- **Surge protection:** Make sure you have installed proper protection against electrical surges in order to prevent damage to the camera, the building and the network infrastructure. This includes surge protectors for 19" racks, adding an uninterruptible power supply (UPS) to the MOBOTIX camera, and installing surge arresters or similar for routers, switches, servers, etc.

2.12 Camera Accessories

Power Supply (MX-SNT-E/U/GB/J/AUS01-30-RJ)

Not required if network components are used that support the PoE (Power-over-Ethernet) standard IEEE 802.3af!

The MOBOTIX power supply is required if you do not use a **Network Power Rack** or **Network Power Box** or a PoE-compatible switch or router.

Network Power Adapter (MX-NPA-3-RJ)

Power supply for smaller systems

The Network Power Adapter allows supplying power to one MOBOTIX camera via the network cable. It thus allows using the network cable for connecting to the camera and for remotely supplying power (up to 100 m (300 ft)). The Network Power Adapter is required if you are using the universal power supply and if power is not supplied using a PoE switch/router or a MOBOTIX Netpower Box/Rack.

Netpower Box for up to 4 Cameras (MX-NPR-4)

Intelligent and robust power supply thanks to DIN rail installation

The MX-NPR-4 allows supplying power to up to four MOBOTIX cameras via the network cable. The NPR-4 thus replaces four separate power supplies and four Network Power Adapters. The Netpower Box delivery includes a (detachable) clip at the back, which simply clicks onto DIN rails.

Netpower Rack for 8/20 Cameras (MX-NPR-8/20)

Zero maintenance and reliable as these devices do not require fans

These devices allow supplying power to up to eight or twenty MOBOTIX cameras via the network cable, respectively. The NPRs thus replace 8/20 separate power supplies and the same number of Network Power Adapters; they are easily mounted in 19" racks (2 rack units).

Advantages of MOBOTIX PoE Products

- Zero maintenance and durable without fans.
- Higher reliability of the system as a whole, since standard switches without PoE can be used (lower risk of failure).
- Easy installation on DIN rails (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

On-Wall Set (MX-D22-OPT-AP)

This set can reliably protect external cables if the cables cannot be guided from below the housing but have to be led above the wall. In addition, the On-Wall mount provides ample space for extra modules.

The camera is **not** included in the delivery of the corresponding set!

On-Wall Set (IP65, suitable for outdoor applications)

On-Wall Set 10°

This On-Wall set is identical as the regular On-Wall set, except that the mounted camera is inclined by 10 degrees. The incline makes it possible for the camera to deliver the best images even in demanding situations.

On-Wall Set 10° (IP65, suitable for outdoor applications; **available Q4/2008**)

In-Ceiling Set (MX-D22-OPT-IC)

The In-Ceiling set allows mounting the Q22M cameras in fake ceilings, for example. This type of installation provides optimum protection for the camera and reduces the visible profile to a minimum since only the dome is visible.

In-Ceiling Set

Vandalism Set (MX-Q22-OPT-VANDAL)

The Vandalism set provides added protection for Q22M cameras. The set consists of a robust stainless steel cover and a dome made of polycarbonate. A camera equipped with the Vandalism set is perfectly suited for applications in demanding environments (such as prisons, social hot spots, train stations, etc.).

Vandalism Set (IP65)

Wall Mount (MX-D22-OPT-WH)

Wall Mount (IP65)

This mount is the ideal solution for mounting the Q22M to walls in indoor and outdoor applications. The camera is absolutely dustproof and resistant against water jets (IP65). The Wall Mount also covers RJ45 wall outlets and also has ample space for additional modules.

Pole Mount (MX-D22-OPT-MH)

Pole mount made of 3 mm stainless steel

The Pole Mount can only be used in conjunction with the Wall Mount. The supplied stainless steel straps allow attaching the mount to poles with diameters between 60 and 180 mm (2.4 to 7.1 in).

The Pole Mount is made from 3 mm white powder-coated stainless steel and is just as robust and maintenance-free as the outdoor Wall Mount.

Notes:

MOBOTIX cameras can be displayed and configured not only in the browser. You can also use **MxControlCenter** and **MxEasy** for this purpose.

3 OPERATING THE CAMERA

3.1 Overview

MOBOTIX cameras **do not require any extra software**. Thus, you can set up and operate the MOBOTIX camera using a **JavaScript-enabled browser** on all common operating systems (such as **Windows**, **Linux**, **Macintosh**, etc.). As an alternative, you can also use the MOBOTIX applications **MxControlCenter** and **MxEasy**. Follow these steps in order to set up the camera:

1) **Connect the camera to the network** (power can be supplied directly via the network cabling).
2) **Set up the camera's network interface:**
   - Manually using a web browser (see section 3.3.1)
   - Automatically using MxControlCenter or MxEasy (see sections 3.3.3 and 3.3.4)
3) **Configure the camera** (using the browser-based user interface).

The following three sections contain brief overviews for the tasks connected with setting up the camera as well as references to the relevant sections in this manual which contain more detailed information.

3.1.1 Connecting the Camera to the Network and to the Power Supply

a) **With Network Power Adapter and external power supply** (**sections 3.2.3** and **3.2.4**):

Suitable for: Connecting one or several cameras to the network or directly to a computer (without using a switch).

MOBOTIX PoE products do not require any fans and are robust and durable!

b) **With PoE components** using the MOBOTIX Network-Power-Rack, MOBOTIX Network-Power-Box or PoE components according to IEEE 802.3af (**sections 3.2.5** and **3.2.6**).

Suitable for: Connecting many MOBOTIX cameras.

3.1.2 Setting up the Network Interface of the Camera and the First Image

Every MOBOTIX camera has its individual factory IP address (e.g. **10.1.0.99**). Local computer networks usually have IP addresses in the 172 or 192 ranges. In order to access a MOBOTIX camera via the network, the camera needs to get an IP address in the same address range. You can set up the network interface of the MOBOTIX camera using one of the following methods:

a) **Manually using a computer in the 10.x.x.x IP address range:** You can set up the camera's network interface using a browser and the embedded camera software. To do this, connect the camera to a computer or a network that is using a 10.x.x.x IP address range (see section 3.3.1, *Manually Setting Up the Network Interface of the Camera*). Once this has been completed, you can enter the factory IP address in the browser address bar (see section 3.3.2, *The First Image and the Most Important Settings in the Browser*). Next, click on the **Admin Menu** button to open the camera's **Quick Installation** in the browser-based user interface. This is where you can configure the desired network parameters of the camera. Once you have completed the Quick Installation, you can connect the camera with its new network parameters to the target network.

Set the network parameters using either **Admin Menu > Quick Installation** or the **Admin Menu > Ethernet Interface** dialog.

Advantages

- The camera does not need to be physically accessible, i.e. it can remain mounted to a pole, for example.
- There is no additional software required.
- You can manually set the network parameters of the camera.

Disadvantages

- The computer or the network need to operate in the **10.x.x.x** IP address range or need to be able to access such a network.
- The setup does not work automatically.
- You need to know the relevant network parameters.

b) **Automatically using MxControlCenter or MxEasy:** You can set up the camera's network interface using the free-of-charge video management software **MxControlCenter** or **MxEasy** (see *sections 3.3.3* and *3.3.4*). You can also use one of these applications to automatically configure the network parameters of MOBOTIX cameras that are not operating on the same IP address range as the computer.

MxEasy is currently under development

Advantages

- You can directly connect the camera to the target network.
- The camera does not need to be physically accessible, i.e. it can remain mounted to a pole, for example.
- The camera can be configured for automatically receiving an IP address (optional).
- You can manually set the network parameters of the camera (optional).
- You do not need to access the camera user interface.

Free download of MxControlCenter and MxEasy:

www.mobotix.com

Requirement

- The **MxControlCenter** or **MxEasy** video management software needs to be installed on the computer.

MxControlCenter (MxCC)

MxEasy

c) **Automatically using DHCP:** The camera can automatically obtain its network parameters using DHCP. Note that this requires a running DHCP server on the network, which can also be a DSL router with activated DHCP server. The camera needs to be booted using DHCP (see section 3.3.5, *Starting the Camera With an Automatic IP Address (DHCP)*). The IP address automatically assigned by the DHCP sever will be announced on the camera speaker as soon as the camera has booted successfully.

Advantages

- You can directly connect the camera to the target network.
- Obtaining the network parameters is an automatic process.
- There is no additional software required.
- You do not need to access the camera user interface.

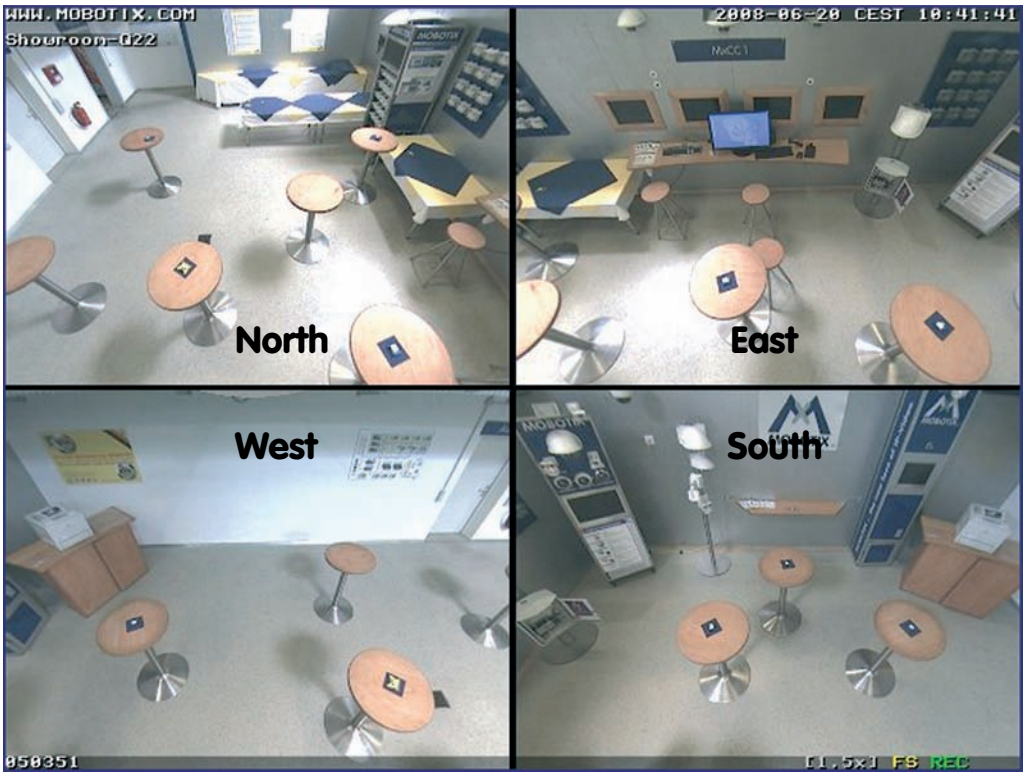
Disadvantages

- The camera needs to be physically accessible since you need to press a key on the camera housing to boot it using DHCP.
- Requires a running DHCP server on the network.

3.1.3 Configuring the MOBOTIX Q22M

The 180° lens with 360° allround view and the integrated **virtual PTZ features (vPTZ)** allows continuously zooming the live image of the MOBOTIX Q22M using the mouse wheel or a joystick. Likewise, you can move the visible image section to any position in the live image.

You should, however, start configuring the camera by setting the **mounting position** of the camera (wall or ceiling) and by setting the **North direction** for the camera. "North" in this context does not refer to compass North, it refers to the main direction of the camera, which is used to set the remaining views (*East*, *South* and *West*) automatically. Setting these four views is especially important for the *Surround* display mode, as it uses the images of four virtual cameras showing the four directions in a single view.



Surround display mode with virtual Quad view offers 360° Allround Surveillance of a complete room in a single view

As these settings are specific to the Q22M, they need to be set up in the browser interface for the moment. For more information of these important configuration steps, please see section 3.3.2, *The First Image and the Most Important Settings in the Browser*.

3.2 Connecting the Camera to the Network and to the Power Supply

3.2.1 Notes on Cable Lengths and Power Supply

- The **power supply of the camera** can only be established using the 10BaseT/NET connector of the camera with the (pre-installed) network cable. In order to supply power via the network cabling we recommend the MOBOTIX PoE products (MxPoE, see also section 2.12, *Camera Accessories*):
  - for one camera using the **Network Power Adapter** (MX-NPA-3-RJ)
  - for up to four cameras using the **Network Power Box** (MX-NPR-4)
  - for up to 8 or 20 cameras using the **Network Power Rack** (MX-NPR-8/20)
- The **maximum length** of the network cable for remotely supplying power is **100 m (300 ft)**.
- Make sure that you only use switches or routers that support the **10/100 Mbps Ethernet interface** of the camera. Check the LED activity of the corresponding port at the switch or router. When operating many cameras, please also see section 4.11, *Operating Many Cameras*, in the *Software Manual*, for additional hints.

Uninterruptible power supply (UPS) should be installed

- It is highly recommended to use **uninterruptible power supplies (UPS)**, which also protect the cameras and the network components against electrical surges.

PoE components without fans increase overall reliability of the entire system

- **Advantages of MOBOTIX PoE Products:**
  - Zero maintenance and durable without fans.
  - Higher reliability of the system as a whole, since standard routers/ switches without PoE can be used (lower risk of failure).
  - Easy installation on DIN rails (*MX-NPR-4*) or in 19" racks (*MX-NPR-8/20*).

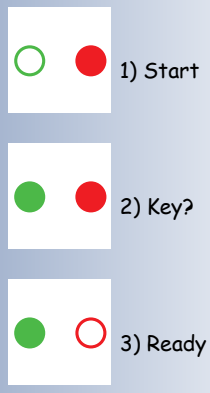
Use the MOBOTIX MX-NPR-4 for smaller installations

Use the 19" MOBOTIX Netpower rack-mount units to supply power to 8/20 cameras (MX-NPR-8/20)

- If you are using **IEEE 802.3af Power-over-Ethernet network components** for supplying power to MOBOTIX cameras, make sure that these components do not have a fan. Since the power consumption of MOBOTIX cameras is very low compared to other products, the reliability of the entire system is increased, thus extending the life of these components.

3.2.2 Camera Startup Sequence

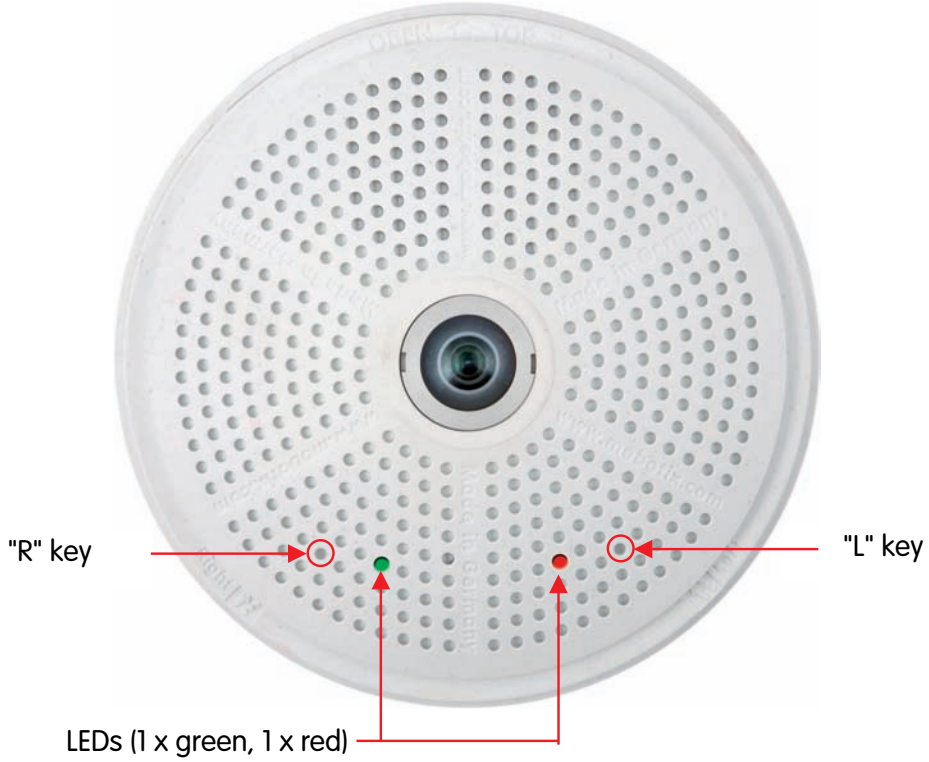
As soon as the camera's power supply has been established, the two LEDs will show the progress of the startup sequence (see section 5.4.3, *LED Signals and LED Configuration*, in the *Software Manual*).



- **Booting:** Immediately after connecting the power supply, the red LED lights up, blinks for two seconds, then stays on permanently. The camera's boot loader checks the hardware, unpacks and starts the operating system. Next, the camera checks its operating system for errors. In case of an error, the camera will start using the backup operating system. After that, both LEDs light up for four seconds.
- **Waiting for key pressed:** Both LEDs light up for four seconds. If you press the **"R"** or **"L"** key of the camera during this time, the camera will execute the corresponding function (see sections 3.3.5 and 3.3.6).
- **Ready:** Once the camera software has been started, the green LED is on permanently and the red LED blinks. You can now reach the camera via the network using a browser.

Note

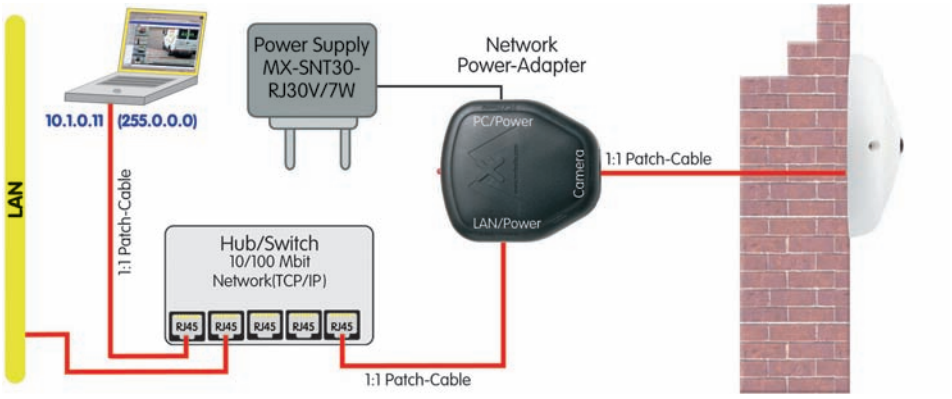
During the startup sequence of the camera, the LEDs will always light up, even if they have been deactivated in **Admin Menu > LED Setup**.



3.2.3 Power Supply (MxPoE) Using a Switch

MOBOTIX power supply and Network Power Adapter required

(1) Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
(2) Connect the **LAN/Power** connector of the NPA to an Ethernet connector of the switch/router or the Ethernet wall outlet.
(3) Plug the RJ45 connector of the external power unit into the **PC/Power** connector of the Network Power Adapter.



3.2.4 Power Supply (MxPoE) When Connected Directly to a Computer

MOBOTIX power supply and Network Power Adapter required

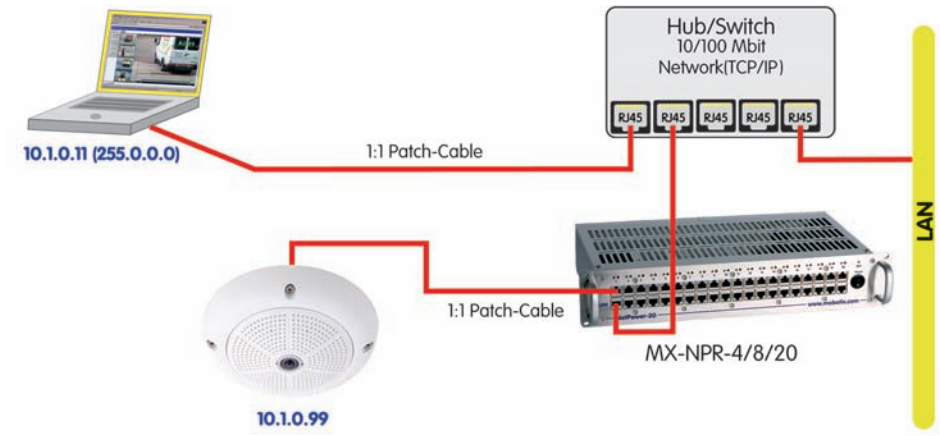
(1) Connect the factory pre-installed cable of the camera to the **Camera** connector of the Network Power Adapter.
(2) Connect the **PC/Power** connector of the Network Power Adapter to the Ethernet port of the computer.
(3) Plug the RJ45 connector of the external power unit into the **LAN/Power** connector of the Network Power Adapter.

The Network Power Adapter replaces the crossover cable when directly connecting to a computer

3.2.5 Power Supply (MxPoE) Using a Network Power Rack or Network Power Box

MOBOTIX Network Power Rack or Network Power Box required

- Connect the factory pre-installed cable of the camera to the **CAM** connector of the **Network Power Rack (MX-NPR-8/20)** or the **Network Power Box (MX-NPR-4)**.
- Connect the **LAN** connector of the Network Power Rack to an Ethernet connector of the switch/router.



Use the 19" MOBOTIX Netpower rack-mount units to supply power to 8/20 cameras

Use the MOBOTIX Network Power Box for smaller installations

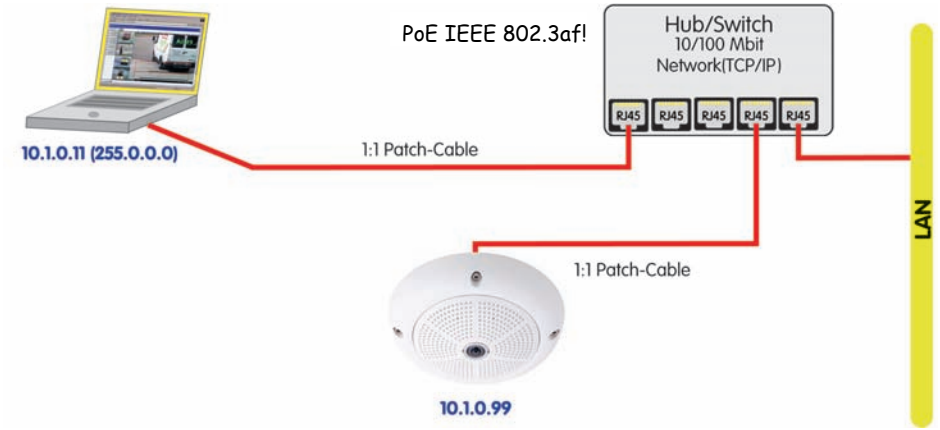
Uninterruptible power supply (UPS) should be installed

A **Network Power Box (MX-NPR-4)** is connected in the same way.

3.2.6 Power Supply (PoE IEEE 802.3af) Using Power-over-Ethernet Products

PoE switch/router according to IEEE 802.3af required

Connect the factory pre-installed cable of the camera to the Ethernet connector of the PoE switch/router. The switch/router needs to support the **PoE standard IEEE 802.3af**.



3.3 The First Camera Image and the Most Important Settings

Once the camera has been connected to the network, you need to set up the camera's network interface accordingly. This step involves setting up and checking the network parameters of the camera.

If your network or your computer is already running on a **10.x.x.x** network with a **255.0.0.0** network mask) you do not need to change the camera's network parameters, which means that you can directly access the camera (see section 3.3.2). If your computer does not use an IP address in the **10.x.x.x** network (e.g. a **192.168.x.x** or **172.x.x.x** network), you should follow one of the following methods for changing the camera's network parameters:

- **Manual setup** (**sections 3.3.1** and **3.3.2**)
- **Automatic setup** using MxControlCenter or MxEasy (see **sections 3.3.3** and **3.3.4**)

Note

For the following examples, we will use a camera with the factory IP address **10.1.0.99**. Replace this IP address with the IP address of your camera. You will find this address on a small sticker on the camera.

Hint: Pressing the "R" key on the camera will let the camera announce the current IP address of the camera on the loudspeaker.

3.3.1 Manually Setting Up the Network Interface of the Camera

In order to manually set up the network parameters of the MOBOTIX camera, you need a computer that is using a **10.x.x.x** IP address. It is recommended to connect the camera to the computer or to a switch. If possible, no other network devices should be connected at the same time.

1) **Determine the network parameters of your computer:**

   Open a command shell (Windows) or a terminal (Linux/UNIX/OS X) and enter the following command:

   - Windows 2000/XP/Vista: `ipconfig`
   - Linux/UNIX and OS X: `ifconfig`

   You will find the IP address of your computer behind **IP address** (Windows 2000/XP/Vista) or behind the **eth0** or **en0** device (Linux/UNIX and OS X).

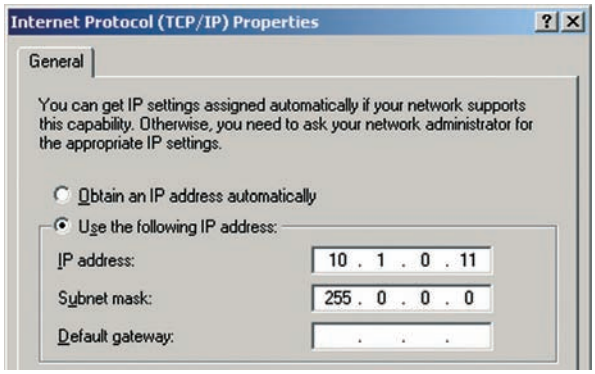
Open a Command Prompt (Windows):
Start > Run, enter "cmd", then press [Return]

2) **Change the network parameters of your computer:**

   - **Windows 2000/XP/Vista:**
     (1) Open the **Network Connections** and open the **Properties of LAN Connection**.
     (2) Double-click **Internet Protocol (TCP/IP)**.
     (3) On the **General** tab, activate the **Use the following IP address** option.

(4) Enter an IP address in the **10.x.x.x** range in this field (e.g. **10.1.0.11**). Note that this must not be the IP address of the camera or of another attached network device.

(5) Close all dialogs by clicking on **OK**.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
10 . 1 . 0 . 11
Subnet mask:
255 . 0 . 0 . 0
Default gateway:

Setting up an IP address on Windows computers

The computer now has the IP address **10.1.0.11**, allowing it to access the camera with its factory IP address in the **10.x.x.x** network (**10.1.0.99** in this example).

Caution: Netmask 255.0.0.0

- **Linux/UNIX/OS X:**

  (1) Open a terminal as **root** user.

  (2) Enter the following command:

  - Linux/UNIX: `ifconfig eth0:1 10.1.0.11`
  - OS X: `ifconfig en0:1 10.1.0.11`

  The computer now has the additional IP address **10.1.0.11**, allowing it to access the camera with its factory IP address in the 10.x.x.x network (**10.1.0.99** in this example).

Setting up a second IP address on Linux/UNIX and OS X computers

3) **Set up the target network parameters of the camera:**

Setting up the network parameters of the MOBOTIX camera for the first time is most easily accomplished using the Quick Installation wizard.

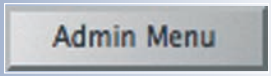
(1) Open a web browser on a computer.

(2) Enter the factory IP address of the MOBOTIX camera (e.g. **10.1.0.99**) in the browser address bar and hit the **Return** key on the keyboard. This will open the user interface of the MOBOTIX camera.

(3) Click on the **Admin Menu** button on the user interface of the MOBOTIX camera (see section 3.3.2). This will automatically open the Quick Installation wizard (see also section 5.2, *Quick Installation*, in the *Software Manual*).

(4) Enter the target network parameters of the camera on the appropriate page of the Quick Installation wizard.

Once you have completed the Quick Installation wizard and rebooted the camera, it will use the new network parameters and you can connect the camera to the target network.

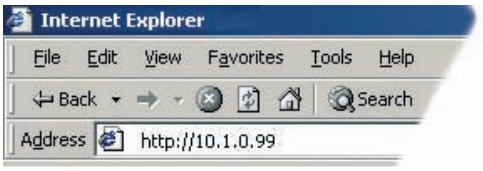


Admin Menu
User: admin
Password: meinsm

3.3.2 The First Image and the Most Important Settings in the Browser

Camera access: http://10.1.0.99 (example IP)

The factory IP address is printed on a sticker on the camera housing



Now that you have successfully started the camera for the first time, you can access the camera using your preferred browser to see the live video stream and the user interface. Internet Explorer, Firefox, Safari, Konqueror, Opera, Camino or any other graphical browser with activated JavaScript is suitable. The operating system is of no importance, even PDAs can be used without any problems.

Administration menu:
User name: admin
Password: meinsm

Softbuttons are freely configurable

After entering the camera's IP address in the browser address bar (e.g. `http://10.1.0.99`), you will see the Live screen of the MOBOTIX camera with its user interface controls, such as **softbuttons**, **buttons** for the different camera screens, pull-down menus (**Quick Controls**), icons for accessing the online help and the camera status, as well as status information elements above and below the live image.

Make sure that you use the IP address of your camera instead of 10.1.0.99!

Note

Default access credentials for the Administration Menu
User name: `admin`
Password: `meinsm`

The most important settings of the Q22M

As the MOBOTIX Q22M has specific **virtual PTZ features (vPTZ)**, you need to set some important additional parameters:

a) **Set the mounting position:** A Q22M camera can be installed at the ceiling or at a wall (**Installation** Quick Control, *Wall* or *Ceiling* option). Note that the camera has different features that depend on the chosen setting.

b) **Set the North direction:** If the camera has been mounted to a ceiling, you should set the North direction. "North" in this context does not refer to compass North, it refers to the main direction of the camera, which is used to set the remaining views (*East*, *South* and *West*) automatically. This step is especially important if you would you like to use the *Surround* mode (see the following section).

1) Use the corresponding Quick Controls to set the camera to the proper **mounting position** (*Ceiling* or *Wall*) and to the *Normal* **display mode** (see section 2.1.1).

2) Rotate the live image to the desired direction by clicking into the live image using the **mouse** or by moving a **joystick** that is attached to the computer.
   - **Mouse:** Clicking into the image will rotate the image so that the clicked point moves to the top.
   - **Joystick:** Tilting to the right/left will rotate the image accordingly.

3) Store the desired North direction by using the **Installation** Quick Control and the *Set North* command.

c) **Activate recording:** To do so, you can either use the Quick Control **Recording** > *Recording on* or by clicking on the **Arm & Record** softbutton. The camera is now ready to record events (alarms) to its factory-installed internal SD card (**only Secure models**).

d) **Set the image recording method (optional):** The camera can either store the image section currently displayed in the live image (**live image recording**, default setting) or the full sensor image (**Full Image Recording**) that is independent of the vPTZ view currently displayed. Open **Setup Menu > Recording** to set the recording method.

1) **Full Image Recording *Off*** (**live image recording**)

   Advantages
   - The stored video/image data can use a lower resolution, which in turn reduces the required bandwidth.
   - Searching video/image sequences in the stored data is faster and requires only little bandwidth.

   Disadvantages
   - When searching video/image sequences, you can only see a smaller image section and not the full sensor image.
   - The event that triggered a video motion (VM) window may not be in the recorded sequences as it had not been in the live image at the time.

Joystick:
Internet Explorer with activated **MxPEG ActiveX plug-in**, **MxControlCenter** (V1.8 or higher) or **MxEasy** required

*Available in a currently developed software version

2) **Full Image Recording *On**

Advantages

- The currently displayed image section of the live image does not influence the recorded images or video sequences.
- The events that triggered video motion windows are always visible in the recorded images or video sequences.

Disadvantages

- The frame rate of the live stream is slightly reduced.
- Image resolution needs to be at least MEGA (1280x960) so that the image quality of the corrected images is high enough.
- Video search requires slightly higher bandwidths.

Note

When using MxControlCenter or MxEasy, you can examine the video sequences that had been recorded in full image mode. You can view the corrected images and use the virtual PTZ features for the examination. This also allows examining the parts of an image or video after the event that had not been on the live image on display at the time of the recording.

e) **Further PTZ settings and actions**

1) **Set the display mode:** By default, Q22M models run in virtual PTZ mode (**Normal** 640x480 pixels, max. **D1-PAL** 768x576 pixels). The camera shows a fully corrected image and you can move and zoom to any position in the full image using the **mouse** or a **joystick**:

- **Mouse:** Clicking into the image moves the center of the virtual camera to the clicked point, the mouse wheel controls the zoom feature.
- **Joystick:** Tilting the joystick to right/left turns the virtual camera, tilting the joystick forward/backward will tilt the camera accordingly; turning the joystick controls the zoom feature.

Using the **Display Method** Quick Control, you can choose a different method for displaying the camera images. You can either view the full (distorted) sensor image (**Full Image**, max. 2048x1536 pixels) or a view with four virtual cameras, which point into the four directions *North*, *East*, *South* and *West* (**Surround**). The **Surround Image** and **Normal Image**

Joystick:
Internet Explorer with activated **MxPEG ActiveX plug-in**, **MxControlCenter** (V1.8 or higher) or **MxEasy** required

Display Mode *Normal*

Display Mode *Surround*

Zoomed image section

Display Mode *Full Image*

softbuttons switch between these display modes (see section 4.9, *Configuring Softbuttons and Managing Functions*, in the *Software Manual*).

2) **Define views:** If desired, you can save the currently displayed live image as a view (**Store View** Quick Control) and load it again using the **Load View** Quick Control. Once you have defined views, the **Auto Mode** Quick Control (see below) can automatically switch between the saved views.

3) **Auto Mode:** This Quick Control can automatically move between the saved views.
   - **Jump N/E/S/W**: Switches between the *North*, *East*, *South* and *West* views (see the **Auto Move on/off** softbuttons).
   - **Pan right**: Turns the virtual camera slowly in clockwise direction.
   - **Pan left**: Turns the virtual camera slowly in counter-clockwise direction.
   - **Views 1-15**: Automatically loads the first 15 views that have been stored using the **Store View** Quick Control, one after the other.
   - **Off**: Deactivates the Auto Mode.

Camera Screens in the Browser

Per factory default, the MOBOTIX camera automatically shows the **Live** screen. You can set a different start page (e.g. the **Guest** screen) in **Admin Menu > Language and Start Page** as this screen only shows the current live image without any further controls.

The other available standard screens include the **Player** screen (playback of recorded images/video sequences) and the **MultiView** screen (shows several camera with live or recorded images. The **Multiwatcher** provides a view of several cameras via a "proxy" camera (especially interesting if you would like to access your cameras from outside of the network and have limited bandwidth) and the **PDA** mode offers a special screen for mobile devices.

For more information on camera screens, see section 4.1.1, *Camera Screens in the Browser*, in the *Software Manual* or in the **online help** of the camera's browser interface. Click on the yellow ? icon in the top right corner of the **Live screen** to open the corresponding page of the online help.

Browser Screens

Live: Live screen of the camera

Player: Playback of recorded image/ video sequences

MultiView: Display of several cameras (Live or Player), management f features

3.3.3 The First Image in MxControlCenter

Installing MxControlCenter

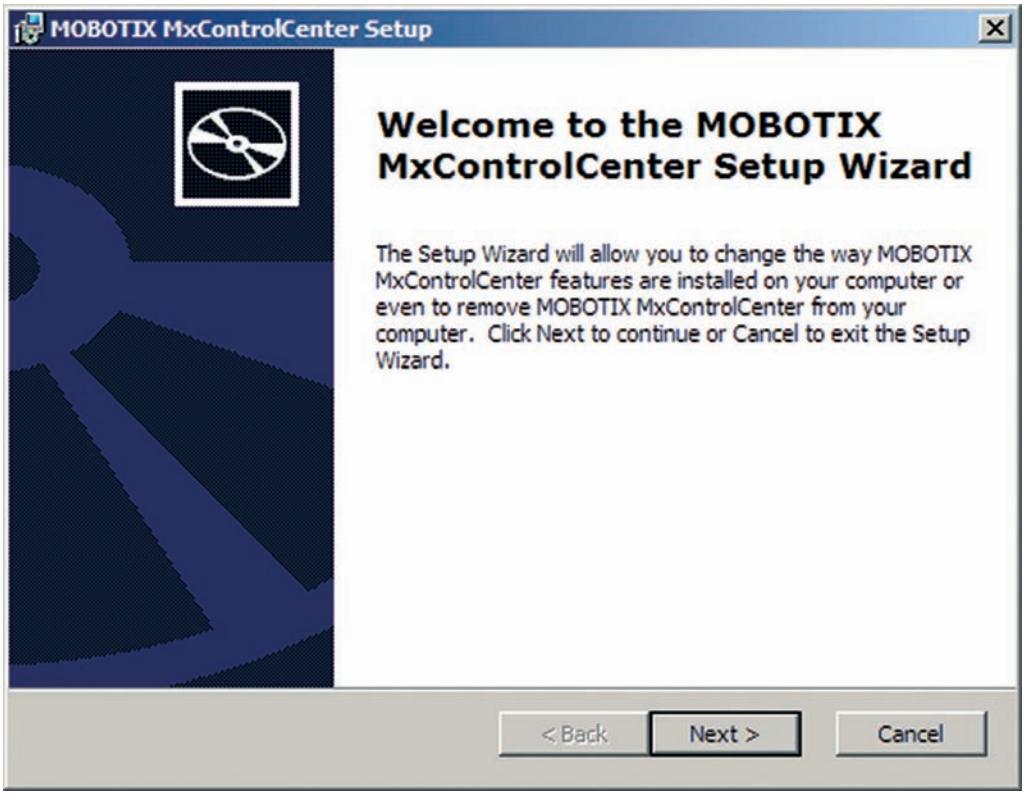
If you have an **MxControlCenter installation CD**, insert it into your computer drive.

Download MxControlCenter free of charge from www.mobotix.com

If this is not the case or if you would like to update to a newer version, you can download the latest **MSI** or **ZIP** file from the MOBOTIX website. The latest version is available at **www.mobotix.com > Support > Software Downloads** in the **MxControlCenter** section.

If you are using the installation CD, the installation process starts automatically and leads you through the necessary steps. In case you have downloaded the Installer, simply double-click the **MSI** file to start the installation process.

Automatic installation of MxControlCenter with Windows Installer (MSI)


MOBOTIX MxControlCenter Setup
Welcome to the MOBOTIX MxControlCenter Setup Wizard
The Setup Wizard will allow you to change the way MOBOTIX MxControlCenter features are installed on your computer or even to remove MOBOTIX MxControlCenter from your computer. Click Next to continue or Cancel to exit the Setup Wizard.
< Back
Next >
Cancel

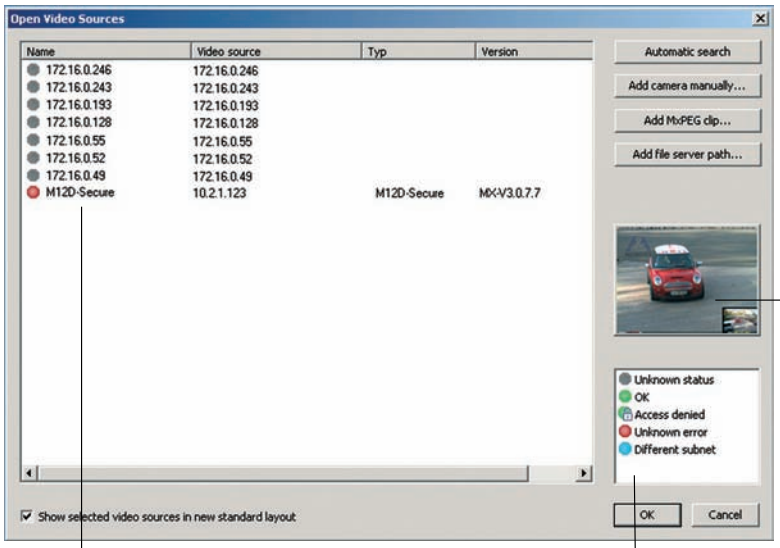
The installer automatically creates shortcuts for the most important programs on your desktop.

Using MxControlCenter for the First Time

Double-click on the shortcut created by the installer (see the previous section *Installing MxControlCenter*) or on the program file itself to start MxControlCenter.

Automated Search for MOBOTIX Cameras

If you start MxControlCenter for the first time or if you have not yet stored a start layout with the desired video sources (i.e. MOBOTIX cameras), the **Open Video Sources** dialog will open and automatically starts scanning the network.



Automatic search for MOBOTIX cameras!

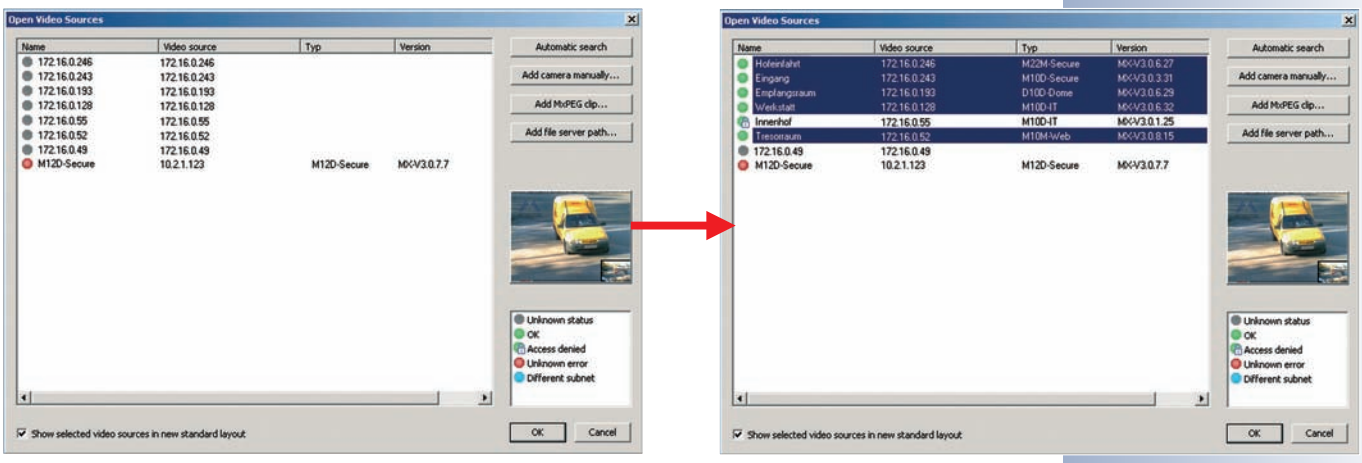
Video sources list

Legend

Camera preview

After all MOBOTIX cameras have been identified, MxControlCenter performs an operational test on the cameras to determine their status and then lists them according to the legend.

Next, MxControlCenter automatically selects all cameras.



Click on **OK** to add the selected cameras to the **Open Video Sources** dialog.

Anytime you connect a new camera to the local network, you can initiate the search in the **Open Video Sources** dialog again by pushing the Automatic search button.

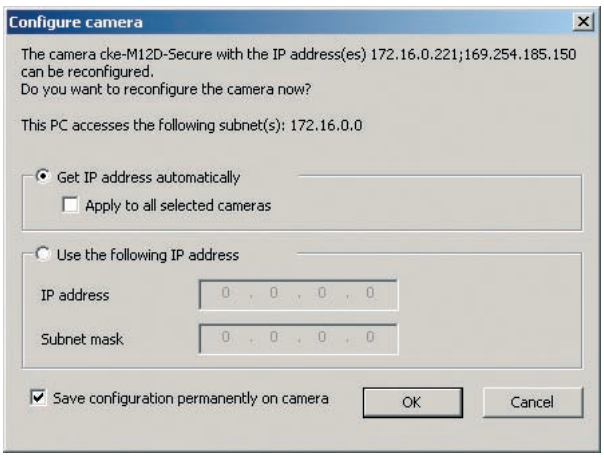
If the desired MOBOTIX cameras are highlighted as *OK* in the video source list (status *OK*), proceed to the *Selecting Video Sources* section further below.

Configuring MOBOTIX Cameras for a Different Network

MxControlCenter automatically configures cameras

Using Bonjour, MxControlCenter finds not only cameras on the same subnet (network range) but also **MOBOTIX cameras located in other subnets** (status *Different subnet*). In such a case, you would not be able to establish any connection to cameras in a different network or subnet (without going into much further detail about the complicated details of TCP/IP network configurations). This is possible, for example, when a camera with a factory IP address is connected to a network in which a DHCP server automatically assigns the IP addresses.

Right-click on a camera, then click on *Configure network* in the context menu and **MxControlCenter can automatically reconfigure this camera** so that it is "integrated" into your existing subnet. However, MxControlCenter first needs some information about the subnet into which the camera will be integrated. You can enter this information in the **Configure Cameras** dialog.


Configure camera
The camera cke-M12D-Secure with the IP address(es) 172.16.0.221;169.254.185.150 can be reconfigured.
Do you want to reconfigure the camera now?
This PC accesses the following subnet(s): 172.16.0.0
Get IP address automatically
Apply to all selected cameras
Use the following IP address
IP address
Subnet mask
Save configuration permanently on camera
OK
Cancel

If your computer gets its IP address automatically from a DHCP server, then this is certainly the best choice for that specific camera and most likely for all other cameras which have been found in a different subnet (**Apply to all selected cameras** checkbox).

If you have assigned a fixed IP address to your computer, you will most likely prefer to assign fixed IP addresses (issued by your system administrator) to every camera. In most cases, you should enter a similar configuration as the one found for your computer's **Network Connections** in the **Properties of Internet protocol (TCP/IP)** dialog.

MxControlCenter changes the network configuration of the current camera and, after a short time, the camera also appears in the list with a new IP address and in the same subnet as your computer.

Make sure that the **Save configuration permanently on camera** checkbox is activated so that the new network settings will be used from now on and not just until the camera's next reboot.

Note

If you have set a different user name and password for administration than the factory-preset ones (**admin**, **meinsm**), you will need to have these user credentials available and enter them in the appropriate dialog. To open the dialog, click on the **Enter password** context menu entry.

Defining Additional Video Sources

Besides automatically detecting MOBOTIX cameras, you can also **manually add other video sources** to the list of available video sources in MxControlCenter.

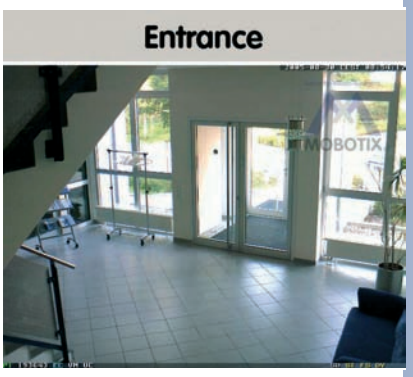
- **Automatic search**: Scans the (physical) network. This scan will find all MOBOTIX cameras, regardless of whether they are in the same subnet as the computer or in a different one.
- **Add camera manually**: Enter a known IP address or the DNS name of a MOBOTIX camera if this camera had not been detected during the automatic search in the first place.
- **Add MxPEG clip**: Adds an MxPEG video clip previously recorded by a MOBOTIX camera as a video source.
- **Add file server path**: Adds the alarm images previously stored by a MOBOTIX camera on an external file server as a video source.

Selecting Video Sources

Highlight the desired video sources you would like to manage and display in MxControlCenter.

Camera Preview

If you select a camera with a status of *OK*, MxControlCenter **automatically displays the live image of that camera in the preview window**. If you are using [Ctrl]-click to select more than one camera, the image from the camera selected last is shown in the preview window. This feature facilitates identifying the cameras you would like to use.



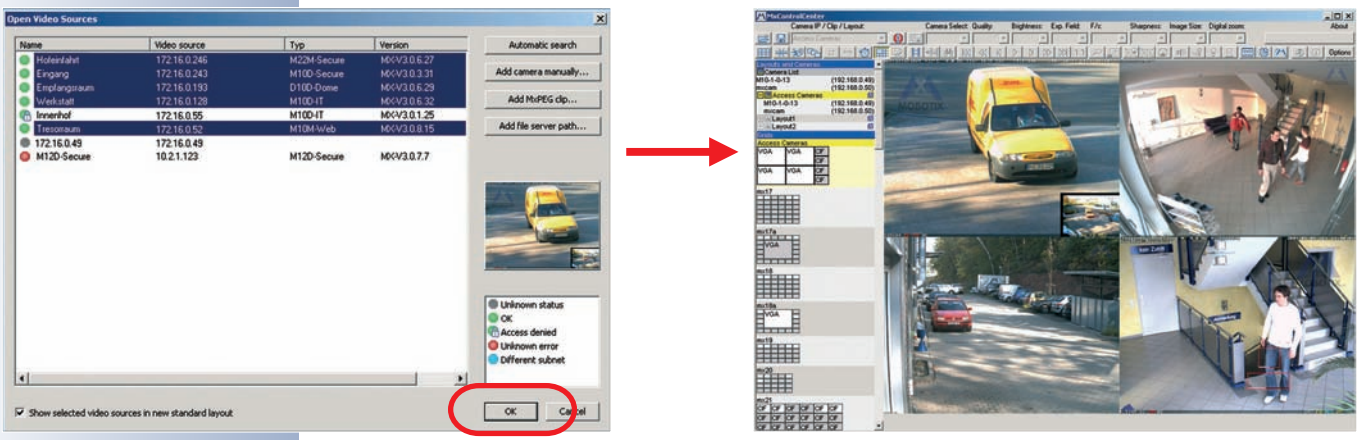
Editing the Video Source List

This list provides a context menu (right mouse button), allowing you to select/deselect all video sources at once. Similarly, you can highlight some or all of the listed video sources and remove them from the list if they are not to be displayed or managed in MxControlCenter.

If you interrupt the discovery process (section *Configuring MOBOTIX Cameras for a Different Subnet*) or require a password that is different from the factory-preset password, you can always relaunch the configuration process from the context menu at a later time and enter the appropriate user name and password.

Using the Selected Video Sources

Clicking on **OK** instructs MxControlCenter to use the highlighted cameras. Activate the **Show selected video sources in new standard layout** checkbox and MxControlCenter automatically generates a layout with the live images of all highlighted cameras.



3.3.4 The First Image in MxEasy

MxEasy is currently under development

Installing MxEasy

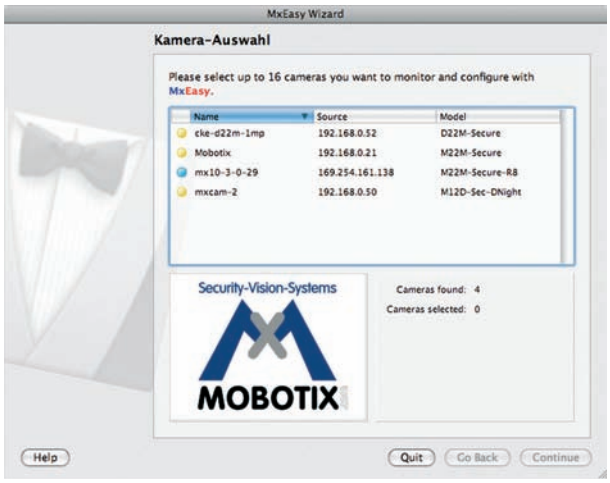
If you have an **MxEasy installation CD**, insert it into your computer drive. The wizard will guide you through the installation process. If this is not the case or if you would like to update to a newer version, you can download the latest MxEasy version for your operating system from the MOBOTIX website. MxEasy will be available from Q4/2008 at **www.mobotix.com > Support > Software Downloads** in the **MxEasy** section.

Using MxEasy for the First Time

Double-click on the shortcut created by the installer (see the previous section *Installing MxEasy*) or on the program file itself to start MxEasy.

Automated Search for MOBOTIX Cameras

If you start MxEasy for the first time on a computer, the **Camera Selection** dialog will appear, showing all detected MOBOTIX cameras. The camera list will be updated automatically if new cameras are connected to or removed from the network.



MxEasy also automatically monitors and displays the operating status of all cameras. Cameras that are not on the same subnet as the computer will get a differently colored icon than the cameras that are on the same subnet. Likewise, the cameras that have an unknown password or for which no user name/password combination has been specified in MxEasy will get a differently colored icon.

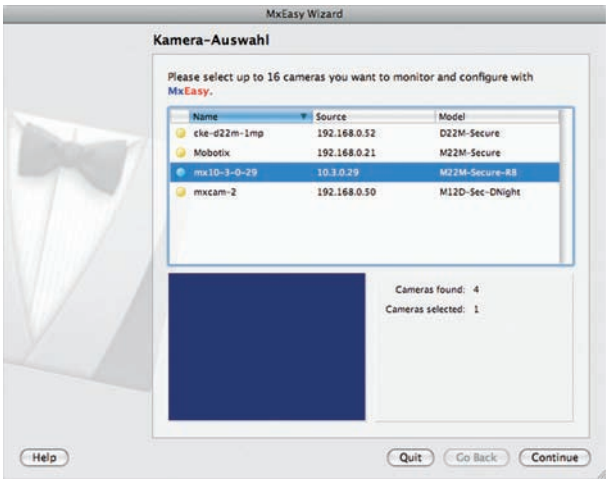
If the desired MOBOTIX cameras are highlighted as *OK* in the video source list, proceed to the *Selecting Cameras* section further below. Cameras that have an *Different subnet* icon can be reconfigured for the "proper" subnet as described in the following section.

Configuring MOBOTIX Cameras for a Different Network

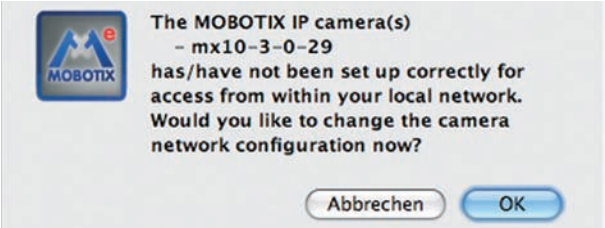
Using Bonjour, MxEasy finds not only cameras on the same subnet (network range), but also **MOBOTIX cameras located in other subnets** (status *Different subnet*). In such a case, you would not be able to establish any connection to cameras in a different network or subnet (without going into much further detail about the specific details of TCP/IP network configurations). This is possible, for example,

Automatic search for cameras

when a camera with a factory IP address is connected to a network in which a DHCP server automatically assigns the IP addresses. **MxEasy can automatically configure such a camera** so that it is "integrated" into your existing network. To do so, simply highlight the desired camera in the list.

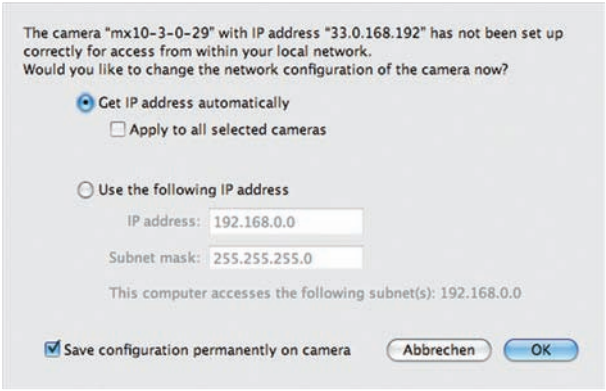


Click on **Next** to display a security prompt; if you click on **OK**, the dialog for reconfiguring the selected camera will appear.


MOBOTIX
The MOBOTIX IP camera(s)
- mx10-3-0-29
has/have not been set up correctly for access from within your local network.
Would you like to change the camera network configuration now?
Abbrechen
OK

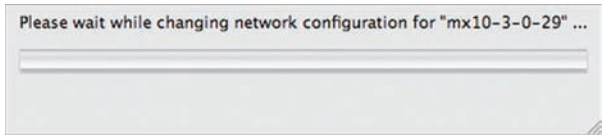
Configuration of IP addresses

If your computer gets its IP address automatically from a DHCP server, then this is certainly the best choice for the that specific camera (**Automatically obtain an IP address**) and most likely for all other cameras which have been found in a different subnet (**Apply to all selected cameras** checkbox).


The camera "mx10-3-0-29" with IP address "33.0.168.192" has not been set up correctly for access from within your local network.
Would you like to change the network configuration of the camera now?
Get IP address automatically
Apply to all selected cameras
Use the following IP address
IP address: 192.168.0.0
Subnet mask: 255.255.255.0
This computer accesses the following subnet(s): 192.168.0.0
Save configuration permanently on camera
Abbrechen
OK

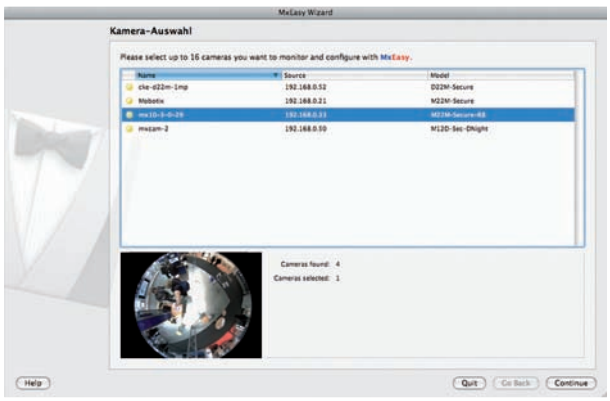
If you have assigned a fixed IP address to your computer, you will most likely prefer to assign fixed IP addresses (issued by your system administrator) to every camera (**Use the following IP address**). Here, for the most part, you should enter a similar configuration as in the network settings of your computer.

Once you click on **OK**, the selected cameras will be reconfigured automatically. All reconfigured cameras are now running in the same subnet as the computer and are displayed with an *OK* status in the camera list.



Selecting Cameras

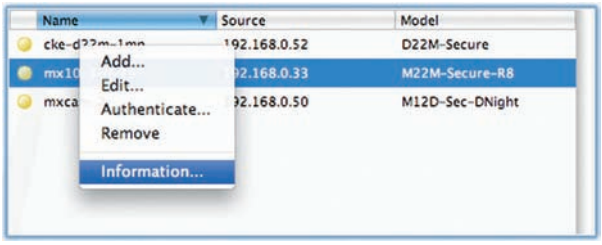
Highlight the desired cameras you would like to manage and display in MxEasy. If you select one camera with an *OK* status, MxEasy **automatically displays the live image of that camera in the preview window**. If you are using [Ctrl]-click to select more than one camera, the image from the camera selected last is shown in the preview window.



Select cameras for display

Editing the Camera List

Use the context menu commands (right-click) to add MOBOTIX cameras to or remove them from the list. In addition, you can display further information of a camera and change the user name/password of a camera. For additional information on this topic, see the *MxEasy User Manual*.



Using the Selected Cameras

Clicking on **Next** will prompt MxEasy to use the selected cameras and to generate a screen with the live images of the four cameras you selected first.

Display of the cameras in MxEasy

The panel at the bottom right corner will always show the last event image of the camera that is displayed in the large panel. Double-click on a small camera panel to move this camera's live image to the large panel.

If you would like to add MOBOTIX cameras to MxEasy, simply click the **Add cameras** button (max. 16 cameras in total).

3.3.5 Starting the Camera With an Automatic IP Address (DHCP)

If your network has a DHCP server, you can start the camera with DHCP support. In this case, the DHCP server automatically assigns an IP address.

Once startup has been completed, the camera automatically announces its IP address, its network mask and its MAC address. Note that this announcement function can be deactivated (**Admin Menu > Loudspeaker and Microphone**).

Activate the camera speaker!

Proceed as follows to start the camera using DHCP:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the camera's **"R" key within four seconds**. Make sure that you **use a paper clip** and **avoid using sharp or pointed objects**.

- After about two more seconds, the camera plays a sound ("Boing, Boing").
- After about another 15 seconds, the camera will announce its network data, provided it has audio functionality.

You can now access the camera using the IP address it just announced and using the list of Bonjour-enabled devices.

Announce IP address: Press **"R" key**

Note

If you would like to have a running camera repeat its network settings, simply press the **"R" key** once.

In case of an error, the camera uses its last IP address

Caution

When starting the camera with DHCP support, make sure that the network has a **properly functioning DHCP server**. If this is not the case, the camera cannot obtain a valid IP address and will fall back to its last IP address.

You should also make sure that the cameras always **get the same IP addresses** by mapping the MAC addresses of the cameras to the desired IP addresses

3.3.6 Starting the Camera Using the Factory IP Address

In certain situations, it may become necessary to start the camera with its factory IP address. This could be the case, for example, if the IP address has been lost or the camera does not react to the last known IP address.

Passwords and camera settings will not be changed!

Proceed as follows to start the camera using its factory IP address:

- If the camera is powered on, disconnect the power supply of the camera by unplugging the corresponding cable.
- Reconnect power to the camera and observe the LEDs.
- Wait until **both LEDs are lighting up simultaneously for the first time**.
- Press the camera's **"L" key within four seconds**. Make sure that you **use a paper clip** and **avoid using sharp or pointed objects**.

- After about two more seconds, the camera plays a sound ("Boing").

The camera is now accessible again using its factory IP address (see label on the camera housing).

Note

If you use the camera's **"L" key** to load the factory network configuration, this configuration is not automatically saved to flash memory. Upon restarting the camera the next time **without** using the camera's **"L" key**, the *last stored network configuration* will be used. To permanently store the new network configuration in the camera's flash memory, open **Admin Menu > Store ...**

Make sure you store the factory network configuration in the permanent flash memory!

Caution

As opposed to resetting the camera using *Admin Menu > Reset configuration to factory defaults*, the user information will *not* be reset if the camera is booted using the factory IP address.

Users and passwords will not be changed!

3.4 Configuring the Camera in the Browser

3.4.1 Overview

You can set up and operate the MOBOTIX camera using a **JavaScript-enabled browser** on all common operating systems (such as **Windows**, **Linux**, **Macintosh**, etc.). The camera provides an HTML-based user interface for this purpose. The camera executes the changes you make to the camera configuration via HTTP commands using programs and scripts of the embedded software. The settings are stored in the camera's flash memory.

This section contains an overview over the first steps for properly configuring the MOBOTIX camera as well as information on further configuration options. For information on configuration steps specific to the Q22M, see section 3.1.3, *Configuring the MOBOTIX Q22M*. Please see the *Software Manual Part 2* for more detailed information on the software features.

Software Manual Part 2:
www.mobotix.com

3.4.2 The First Configuration Steps

Always use **Quick Installation** for initial configuration!

Admin Menu
User: admin
Password: meinsm

- **Run the Quick Installation:** After booting the MOBOTIX camera for the first time, accessing the administration menu (**Admin Menu** button) will automatically start the Quick Installation wizard. The Quick Installation wizard helps you in setting the most important parameters of the camera. For security reasons, you should set your own administration password and disable the public access to the camera (see below).
  => **(Software Manual, section 5.2)**
- **Disable public access:** Guest users are only allowed to access the Guest screen of the camera without entering a password. If this is not desired, you should deactivate public access (**Quick Installation** or **Admin Menu > Users and Passwords**).
  => **(Software Manual, section 5.4.1)**
- **Add users and assign access rights:** Similar to a computer operating system you can add users and user groups and assign the desired rights (**Admin Menu > Users and Passwords** and **Admin Menu > Group Access Control Lists**). This approach allows assigning individual access rights to camera-specific features based on the user groups.
  => **(Software Manual, section 5.4.1)**
- **Deactivate the automatic reboot:** In its factory state, every MOBOTIX camera will automatically reboot every morning at 3:36 am. If the camera does not use an external file server, the internal Flash storage or SD cards, but the internal volatile memory, all recorded images and video sequences will be deleted when the camera reboots. Make sure that you deactivate the automatic reboot if this is not desired (**Admin Menu > Time Tasks**).
  => **(Software Manual, section 7.9.2)**

- **Optimize the image settings:** The factory image settings of MOBOTIX cameras deliver excellent images for most application scenarios and should not be changed. If you do wish to make changes, your changes should be minor and gradual. You should, however, set an image program according to the application scenario of the camera. Image programs provide a quick and simple method for adjusting the camera to the application scenario as they perform several configuration steps at once (**Image Programs** Quick Control).
  => **(Software Manual, section 5.5.2)**

Recommendation: Select an image program to quickly adapt the camera to the current application scenario

- **Set the resolution of the live image:** By factory default, all MOBOTIX cameras are delivered with an image resolution of 640x480 pixels. You can select the desired resolution using the **Resolution** Quick Control.
  => **(Software Manual, section 4.3.3)**
- **Adjust the exposure:** The automatic exposure control of the MOBOTIX camera uses individually configurable windows to determine the best image exposure. Open the **Exposure Windows** Quick Control and select a predefined set of exposure windows. If required, you can also define custom exposure windows (**Setup Menu > Exposure Settings**).
  => **(Software Manual, section 5.7)**
- **Activate event control and recording:** By factory default, the MOBOTIX camera's event control is disabled. Click on the **Arm & Record** button to activate event control. This will activate video motion detection and recording. Cameras with integrated Flash memory (MOBOTIX R models and models with SD card) will use the Flash memory by default to store the image and video data (recording target). If desired, you can set additional events and adjust the settings of the recording and storage parameters (**Setup Menu > Event Settings**, **Setup Menu > Recording** and **Admin Menu > Recording to External File Server / Flash Device**).
  => **(Software Manual, chapters 7 and 8)**
- **Set up actions/messaging:** Upon detecting an event, the MOBOTIX camera can trigger alarms. These alarms can be adjusted to your needs and you can assign them to one or more events: playing back a sound alarm on the camera speaker, showing the visual alarm in the camera live image, sending an e-mail or network message with the alarm image, placing a phone call, uploading an alarm image to an FTP server, switching a signal output line of the camera (e.g. for switching on the lights/opening a door). To change the corresponding settings, please refer to these dialogs: **Setup Menu > Actions, Setup Menu > Messaging** and **Messaging 2**, **Setup Menu > Enhanced Signal Out Options.**
  => **(Software Manual, chapter 7)**

3.4.3 Additional Configuration Options

Admin Menu
User: admin
Password: meinsm

- **Administering the camera:** You can modify the camera configuration in the Administration menu (**Admin Menu** button) or the Setup menu (**Setup Menu** button).
  - **Admin Menu:** This menu contains the basic configuration dialogs of the camera (e.g. passwords, interfaces, software update).
  - **Setup Menu:** This menu contains the dialogs for configuring the image, event and recording parameters. Some of these settings can be changed using the corresponding **Quick Controls** in the Live screen.
- **Resetting changes:** If you would like to reset changes in one dialog without resetting the complete configuration, you can use the **Factory** button at the bottom of the dialog to reset only this dialog's settings to the factory defaults. If you would like to reset all image settings, you can do so using the **Manage Settings >** *Restore Image Settings* Quick Control above the image on the Live screen.

Make sure to permanently store changed parameters!

- **Storing the configuration permanently:** Once you have finished configuring the camera, you should always **store the settings in the camera's permanent memory**. You can do so in each dialog (clicking on **Set** at the bottom of each dialog will temporarily set the changes; clicking on **Close** will ask you to store the complete configuration in the cameras permanent memory) or in the **Configuration** section of the administration menu (**Admin Menu > Store current configuration into flash memory**). The **Configuration** section of the administration menu provides more functions for storing, copying and managing camera settings. For additional information on this topic, see chapter 5, *Basic Camera Configuration*, in the *Software Manual*.

Automatic time synchronization using a time server

- **Time tasks and time synchronization:** Apart from a multitude of possibilities for controlling the camera using time (time tables, holiday and vacation, scheduled tasks, etc.), the camera can also **synchronize its internal clock**. This allows you to keep the camera in synch manually with a computer or fully automatic using a time server or another MOBOTIX camera. The camera can use either NTP time servers or Time Protocol servers. For additional information on this topic, see section 5.4.2, *Date and Time / Time Zones and Time Servers*, in the *Software Manual*.

More: Display advanced features

Less: Hide advanced features

- **The "More" and "Less" buttons:** When opening some of the camera dialogs, the camera only shows the most important parameters. These dialogs have a **More** button in the bottom right corner; click on it to display additional options. If all options are displayed, click on the **Less** button to hide the additional options.

Notes:

3.5 SD Card Recording

3.5.1 Introduction

Flash-based storage devices (SD cards, CF cards, USB sticks and solid-state disks) do not contain any moving parts as compared to the commonly used hard disks. Flash-based devices are compact, largely resistant to humidity and shock, use very little energy, do not loose data on power failures and get less expensive all the time. They are thus ideally suited for the MOBOTIX cameras.

Maximum Data Transfer Rate

Using high-quality Flash devices such as the MOBOTIX R models will allow recording the video sequences of a MOBOTIX camera with the highest possible frame rate (e.g. continuous recording including audio). When using SD cards, however, it is imperative to use a high-quality card with a high maximum data transfer rate (writing speed is most important). For information on recommended SD cards, please see the MOBOTIX website **www.mobotix.com**.

Number of Write/Delete Cycles per Flash Storage Cell

The number of write/delete cycles of every storage cell of a Flash device is limited (e.g. 10,000, 100,000 or more, depending on the quality). The controller of the Flash device automatically detects Flash cells that do not work properly any more. The contents of the faulty cell will then be rebuilt using a checksum and will be moved to a properly working spare cell. The faulty storage cell will be marked as "bad" and will not be used any more. Note that no data is lost in this process.

In addition, MOBOTIX cameras constantly monitor the wear of activated Flash storage devices. MOBOTIX has developed a technology to test the wear of the Flash device by logging the number of write/delete cycles (patent pending). Open **Admin Menu > Camera Status** to see the **Flash Cell Wear** parameter. The camera can also display this information in the status bar at the bottom of the live image.

Conservative Memory Usage Thanks to MOBOTIX MxFFS File System

MxFFS formatting of the SD card means that the MOBOTIX camera software will use the Flash device as evenly as possible, thus allowing for the maximum possible number of write/delete cycles. This also means that all storage cells of the Flash device will be written and deleted with the same frequency, if possible. The MOBOTIX technology increases the life of the Flash device considerably and also improves the security and the reliability of the storage process.

Storage Requirements and Life Expectancy of SD Cards

The life expectancy of an SD card increases proportionally to the storage capacity, since the camera software will execute fewer write/delete cycles on each storage cell. The first delete operation will start once the SD card has been filled to capacity (first full cycle).

The following tables contain estimated values for the expected storage requirements in connection with image resolution, frame rate and video codec used (M-JPEG or MxPEG) as well as the expected life of two SD cards with different capacities (16 GB and 1 GB).

16 GB SD Card: Storage Requirements and Life Expectancy

	6 fps CIF	6 fps VGA		1 fps MEGA	1 fps QXGA
	M-JPEG	M-JPEG	MxPEG	M-JPEG	M-JPEG
File size single image	15 kB	45 kB	-	120 kB	240 kB
Storage req. per second	90 kB	270 kB	75 kB	120 kB	240 kB
Storage req. per 24 hrs	7.8 GB	23.5 GB	6.5 GB	10.4 GB	20.8 GB
Time for one full cycle	2 days	16 hours	2.4 days	1.5 days	18 hours
Est. theor. life expectancy	30 years	10 years	36.5 years	23 years	11.5 years

All values are rounded estimates

1 GB SD Card: Storage Requirements and Life Expectancy

	6 fps CIF	6 fps VGA		1 fps MEGA	1 fps QXGA
	M-JPEG	M-JPEG	MxPEG	M-JPEG	M-JPEG
File size single image	15 kB	45 kB	-	120 kB	240 kB
Storage req. per second	150 kB	270 kB	75 kB	120 kB	240 kB
Storage req. per 24 hrs	7.8 GB	23.5 GB	6.5 GB	10.4 GB	20.8 GB
Time for one full cycle	3 hours	1 hour	3.6 hours	2.3 hours	1.1 hours
Est. theor. life expectancy	1.9 years	**7.5 months**	2.2 years	1.4 years	**8.5 months**

All values are rounded estimates

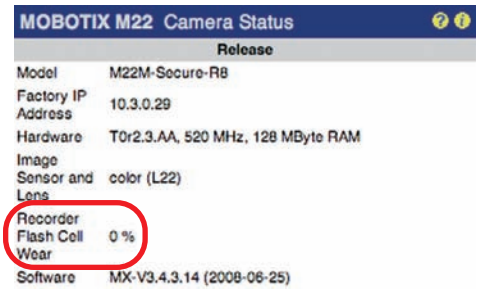
Caution

It is recommended to use only high-grade SD cards that are new. For information on recommended SD cards, please see www.mobotix.com.

For security applications, it is highly recommended to exchange the SD card against a new one after one year of operation.

When storing to an SD card, you should limit event recording to the *minimum* required frame rate instead of the default *Max fps* setting (Setup Menu > Recording).

Monitoring the Cell Wear of Flash Storage Devices (Patent Pending)



MOBOTIX uses its own technology for this purpose and has a pending patent. Open **Admin Menu > Camera Status** to see the **Flash Cell Wear** parameter. The camera can also display this information in the status bar at the bottom of the live image. In addition, the camera can send a warning message (e.g. via e-mail) if the Flash cell wear reaches a critical value (**Admin Menu >Storage on External File Server / Flash Device**). This leaves enough time to exchange the SD card before the chance of loosing data gets too high.

MOBOTIX R Models vs. Storage on SD Cards

The Flash memory in MOBOTIX R models (CF card) has been carefully selected by MOBOTIX and is tested in every camera. This ensures that the requirements for fast storage of video and image sequences are fulfilled or even exceeded in any case. The maximum data rate (write speed) of the memory used in MOBOTIX R models is by far higher than the maximum data output of the MOBOTIX camera even in extreme situations. This means that there are always ample reserves.

In contrast to the CF memory of R models, the maximum data rate of SD cards that the user has inserted into the camera is unknown. It is likewise unknown if the SD card has been used before and how worn out the Flash cells are. **MOBOTIX can thus guarantee the quality of the Flash memory in R models, but not the quality of SD cards.**

Advantages of R Models

- Guaranteed quality of the Flash memory
- Guaranteed minimum data throughput rate
- Enhanced security thanks to integration into the camera housing
- High data security thanks to encryption (optional)

Advantages of SD Card Recording

- Easily accessible
- Easily exchangeable
- Scalable
- Can be read on computers running MxControlCenter (with SD card reader)
- High data security thanks to encryption (optional)

3.5.2 Formatting an SD Card With the MxFFS Format

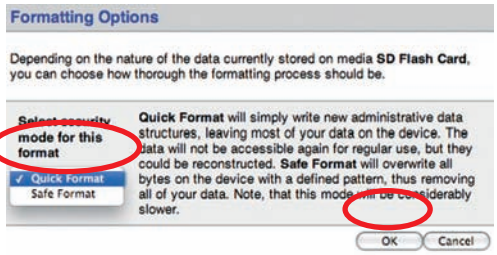
Before a MOBOTIX camera can store image and video sequences on an SD card, it needs to be formatted as **MxFFS** (SD cards delivered with MOBOTIX cameras are already **MxFFS**-formatted).

Follow these steps to format a storage device (**Admin Menu > Storage on External File Server / Flash Device** dialog):

1) Make sure that an SD card is in the SD card slot of the MOBOTIX camera (see section 2.10.2, *Inserting an SD Card*).

2) Click on the **Options** button behind **SD Flash Card**.

3) Select the *Quick Format* option in the next dialog and click **OK**.

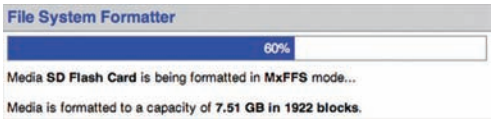

Formatting Options
Depending on the nature of the data currently stored on media SD Flash Card, you can choose how thorough the formatting process should be.
Select security mode for this format
Quick Format
Safe Format
Quick Format will simply write new administrative data structures, leaving most of your data on the device. The data will not be accessible again for regular use, but they could be reconstructed. Safe Format will overwrite all bytes on the device with a defined pattern, thus removing all of your data. Note, that this mode will be considerably slower.
OK
Cancel

The *Safe Format* option will make sure that the data on the SD card is overwritten completely so that the data cannot be recovered in any way. Please note, however, that the formatting process with this option takes much longer (several hours) than when using the *Quick Format* option (a few minutes).

4) Enter the user name and password of a user of the *admins* group in the dialog that opens and click on **OK**.

Authentication Required
WARNING
You are about to erase all data on device SD Flash Card by reformatting it in MxFFS mode. You are therefore once again required to provide admin-level authentication below.
User Name
admin
Password
Really proceed with formatting and erasing device SD Flash Card?
OK
Cancel

The MOBOTIX camera starts formatting the SD card. It usually takes between 5 to 12 minutes to format an 8 GB SD card using the *Quick Format* option and 3 to 14 hours using the *Safe Format* option.


File System Formatter
60%
Media SD Flash Card is being formatted in MxFFS mode...
Media is formatted to a capacity of 7.51 GB in 1922 blocks.

Once the formatting has been completed, you can activate the SD card for recording (see next section).

Caution

Make sure that you always wait until the formatting process has been completed before accessing the camera again. This usually takes only several minutes, but it may take several hours when using the *Safe Formatting* option! You can only access the SD card once MxFFS formatting has completed!

Follow these steps to format an SD card in **Admin Menu > Storage on External File Server / Flash Device**

The **Safe Formatting** option takes several hours. You can also use suitable applications on Windows, Linux and Mac OS X computers to safely format the SD card.

3.5.3 Activating the Recording on an SD Card

Follow these steps to activate the recording to an SD card that has already been MxFFS-formatted (**Admin Menu > Storage on External File Server / Flash Device**):

1) Make sure that an SD card is in the SD card slot of the MOBOTIX camera (see section 2.10.2, *Inserting an SD Card*).
2) Make sure that the SD card has been MxFFS-formatted (see section 3.5.2, *Formatting an SD Card With the MxFFS Format*).
3) Activate the **SD Flash Card** option.
4) Click on **Set**, then on **Close** and store the configuration to the camera's permanent memory.
5) Reboot the camera (**Admin Menu > Reboot Camera**).
6) Once the camera has rebooted, make sure that the camera shows the FR REC symbols in the live image. If this is the case, the camera uses the SD card as recording target. If not, you can activate the recording (see below).

Follow these steps to activate the recording on an SD card in **Admin Menu > Storage on External File Server / Flash Device**

Activating the Recording

If the FR REC symbols are not visible in the camera's live image after rebooting, you need to activate the recording using one of the following methods.

- In the web browser: Click on the **Arm & Record** button, then on **OK** to automatically activate recording.
- In the web browser: Set the **Recording** Quick Control to *Recording on* to manually activate recording.
- In the web browser: Open the **Setup Menu > Recording** dialog to manually activate recording.
- MxEasy: You can use the calendar features of MxEasy to activate recording based on time and date information (see also section 3.3.4, *The First Image in MxEasy*).

MxEasy is currently under development

Activating Encryption and Authentication

If security is an issue, you can opt to store only encrypted video data on the SD card. If you would like to use encryption, make sure that you activate this option when formatting the card. Note that you also need to enter an **Authentication** password. Switching from encrypted to unencrypted storage (and back) is not possible without reformatting the SD card.

3.5.4 Accessing the Data on an SD Card

To access the stored image and video sequences on the SD card, you can use the camera's Playback screen. The following options are available:

MxEasy is currently under development

- **In the web browser:** Play back the recorded video sequences directly from the SD card using the Playback screen of the camera. To do so, insert the SD card into any SD card-enabled MOBOTIX camera.
- **In MxEasy:** Play back the recorded video sequences from the SD card via the MOBOTIX camera.
- **In MxControlCenter:**
  - Play back the recorded video sequences from the SD card via the MOBOTIX camera.
  - Play back the recorded video sequences directly from the SD card in a card reader connected to the computer. Access the card by setting the SD card's drive/volume as a "directory" in MxControlCenter.

If the SD card's contents are encrypted, you need to enter the corresponding password before you can access the recorded video data. In MxControlCenter or MxEasy, a dialog will automatically prompt you for this purpose.

Caution

When using the SD card from one MOBOTIX camera in another MOBOTIX camera, you need to make sure that the time on the original camera is in sync with the new camera. It is recommended to use automatic time synchronization via a time server.

3.5.5 Using an SD Card in a Different MOBOTIX Camera

An SD card containing recorded video data from a MOBOTIX camera can be inserted into any SD card-enabled MOBOTIX camera. Once SD card recording has been activated (requires a reboot), the "new" MOBOTIX camera automatically synchronizes with the SD card and resumes recording. Note that no data is lost in this process. Make sure that you deactivate **SD card recording** and reboot the MOBOTIX camera before removing the card!

Caution

An SD card may only be removed from the camera after you have deactivated *Recording to SD Card* and rebooted the camera. Failing to do so may lead to loss of data!

Removing connected storage media from the camera without properly deactivating them will destroy certain areas of the storage device. When using MxFFS-formatted media, this is limited to 4 MB lost data per incident; a FAT storage device may even be destroyed completely when removing the device without properly deactivating it first!

If the SD card's contents are encrypted, you need to enter the corresponding password in the "new" camera in the **Admin Menu > Storage on External File Server / Flash Device** dialog. Otherwise, the camera cannot access the SD card.

3.5.6 Deactivating SD Card Recording and Removing the Card

Follow these steps to deactivate the recording to an SD card (**Admin Menu > Storage on External File Server / Flash Device**):

1) Activate the **None** option.
2) Click on the **Set** button at the bottom of the dialog, then on **Close**.
3) Reboot the camera (**Admin Menu > Reboot Camera**).
4) Once the camera has rebooted, make sure that the camera does not show the FR symbol in the bottom right corner of the live image.
5) You can now safely remove the SD card from the camera.

Caution

An SD card may only be removed from the camera after you have deactivated *Recording to SD Card* and rebooted the camera. Failing to do so may lead to loss of data!

Removing connected storage media from the camera without properly deactivating them will destroy certain areas of the storage device. When using MxFFS-formatted media, this is limited to 4 MB lost data per incident; a FAT storage device may even be destroyed completely when removing the device without properly deactivating it first!

3.5.7 Limitations on Warranty When Using Flash Storage Media

Caution

MOBOTIX will not assume any responsibility for Flash storage devices (e.g. SD cards or connected USB storage devices) delivered with or integrated in MOBOTIX cameras. The same applies to damages to Flash storage media not acquired through MOBOTIX or by the use of such media.

3.5.8 Problems Accessing an SD Card

Caution

Some SD cards cannot be set back reliably by the MOBOTIX camera when rebooting. In rare occasions, the camera cannot access such an SD card after the camera has executed a soft reboot. If this should be the case, you need to execute a camera hard reboot (disconnect the camera from the power supply, then reconnect it, e.g. by disconnecting, then reconnecting the network cable at a PoE switch). The SD card should be once again accessible in the usual way.

If you experience this behavior, you should also deactivate the automatic reboot of the camera in the *Admin Menu > Time Tasks* dialog.

Notes:

3.6 Important Notes

3.6.1 Weatherproofness

The MOBOTIX Q22M Secure models reach **protection class IP65** (absolutely dust-proof, resistant against water jets) and are an excellent choice for outdoor applications when used with the **wall mount**. The Basic model of the MOBOTIX Q22M reaches protection class IP54.

3.6.2 Password for the Administration Menu

Accessing the administration area of the camera (**Admin Menu** button) is only possible after entering a user name and password.

- Factory default user name is `admin`
- Factory default password is `meinsm`

The **Quick Installation** wizard will appear automatically when accessing the Administration Menu for the first time. It provides an easy method to adjust the basic camera settings to the current application scenario. **For security reasons, it is highly recommended to change the default administrator password after the camera has been configured properly.**

Enter the user name and password exactly as shown above. Note that all entries are case-sensitive.

Caution

Make sure that you store information on user names and passwords in a secure place. If you loose the administrator password and cannot access the Administration menu, the password can only be reset at the factory. This service is subject to a service charge!

3.6.3 Irreversibly Deactivating the Microphone

The microphone can be irreversibly deactivated!

Deactivating a camera's microphone may become necessary in order to protect the privacy of persons at a workplace or for other reasons. You can permanently and **irreversibly** deactivate the microphone in the **Admin Menu > Loudspeaker and Microphone** dialog.

Caution

This deactivation is permanent and cannot be reversed even by MOBOTIX engineers. Deactivating the microphone will also deactivate all features that use the camera's microphone.

3.6.4 Starting the Camera Using the Factory IP Address

If the camera's IP address is not known, you can start the camera with its factory IP address. Section 3.3.6, *Starting the Camera Using the Factory IP Address*, describes this procedure in more detail.

3.6.5 Resetting the Camera to Factory Defaults

All settings of the MOBOTIX camera can be reset permanently to the factory default settings. This makes sense if you have, for example, obtained a camera without any information or you would like to reset all settings after testing the camera. In order to perform this procedure, you need to have access to the administration area of the camera (**admins** group). Open **Admin Menu > Reset ...** to reset the camera to factory defaults.

The configuration can also be reset partially

Note: **All defined users will be deleted and the admin password will be reset to the factory default** when you reset the camera using **Admin Menu > Reset ...** Proceed according to section 3.3.6, *Starting the Camera Using the Factory IP Address*, if you would like to maintain existing users.

3.6.6 Activating Event Control for Security Applications

In its default configuration, the camera's **event control and video motion detection features** are **not enabled**. In order to activate event-controlled recording, open **Setup Menu > General Event Settings** and activate the **Arming** switch. Another method to achieve this is to click on the **Arm & Record** softbutton of the browser user interface. The camera displays the video motion detection window in the live image (dotted frame in the center) and the camera automatically stores images as soon as the video motion window detects movements.

If the dotted rectangle in the live image is visible, the camera is armed

3.6.7 Deactivating Text and Logo Options

As the camera arming is deactivated in its default configuration (see preceding section), the MOBOTIX camera only displays the Text **WWW.MOBOTIX.COM**, the time stamp and the MOBOTIX logo at the top of the image. Once the camera arming has been activated, the text at the bottom of the live image (event, action, messaging and recording symbols) will also appear.

Text and logos can be also deactivated or customized to your liking

You can deactivate the status text at the bottom and the text at the top left corner of the live image by setting **Text Display** in the **Setup Menu > Text & Display Settings** dialog to *Off*. Setting **Text Display** to *Date & Time* will only display the time stamp in the live image.

In order to hide the logo in the live image, open **Admin Menu > Logo Profiles** and set **Logo Display** to *Disable*.

Deactivating the camera reboot

3.6.8 Deactivating the Automatic Daily Reboot of the Camera

Per factory default, the MOBOTIX camera automatically reboots every morning at 3:36 am. The reason for this is that external influences (e.g. radiation in high locations) can lead to camera malfunctions. The automatic reboot will refresh the camera's memory and will ensure proper operation without requiring any interaction on the part of the user. If desired, you can deactivate the automatic reboot of the camera in the **Admin Menu > Time Tasks** dialog.

3.6.9 ISDN Compatibility Notes

MOBOTIX Q22M, M22M and D22M models do not possess ISDN functionality. MOBOTIX M12, D12 and V12 cameras are compatible with **Euro ISDN standard TBR3/TBR3 A1**. MOBOTIX offers special models for the Japanese market that support the Japanese ISDN standard. For additional information on this topic, see the Japanese section at **www.mobotix.com**.

3.6.10 Using Internet Browsers

Current Internet browsers (Internet Explorer, Netscape, Mozilla Firefox, Safari, Konqueror, Opera, …) with enabled **JavaScript** can show the camera's live images with their standard settings. Text-based browsers (e.g. **lynx**) cannot display the user interface and are *not* suitable for operating the camera.

Section 4.1.3, *Browser Settings*, in the *Software Manual* contains more information on browser compatibility. For additional information on troubleshooting the camera, see chapter 12, *Troubleshooting*.

3.6.11 Cleaning Instructions

If a lens is dirty (e.g. from the installation process), you can clean the lens using a lint-free cotton cloth.

3.6.12 Safety Warnings

Electrical surges can be induced by other electrical appliances, improper wiring, but also from the outside (e.g. lightning strikes to phone or power lines).

MOBOTIX cameras are protected against the effects of small electrical surges by numerous measures. These measures, however, cannot prevent the camera from being damaged when stronger electrical surges occur. Special care should be taken when installing the camera outside of buildings to ensure proper protection against lightning, since this also protects the building and the whole network infrastructure.

MOBOTIX recommends having MOBOTIX cameras installed only by specialists accustomed to installing network devices and having proper respect for the pertinent regulations regarding lightning protection and fire prevention as well as the current technology for preventing damages from electrical surges.

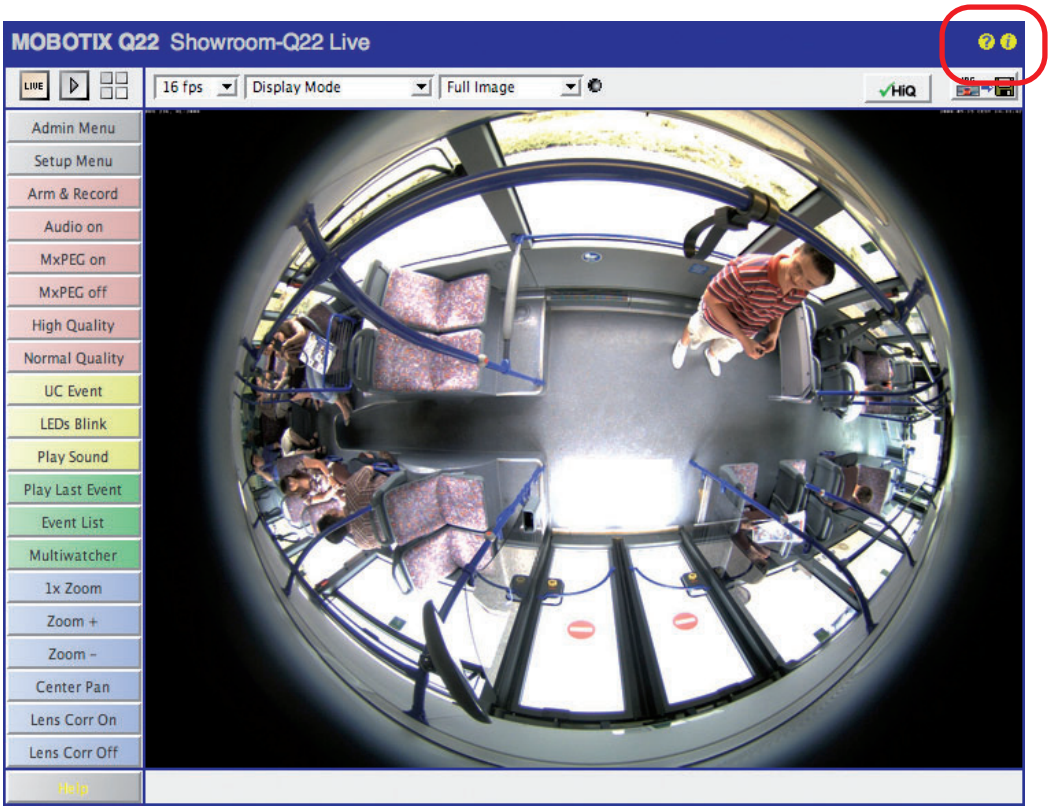
For more information on wiring and potential dangers, see the section *Wiring, Fire Prevention, Lightning and Surge Protection* at the end of chapter 2.

3.6.13 Additional Information

For more information on this topic, see the **News** and **Functional Overview** pages in the **online help** of the camera's browser interface. Click on the yellow [Objekt] icon in the top right corner to open the camera's online help.

To get complete information on the camera status and its current configuration, open the **Camera Status** dialog. Click on the yellow [Objekt] icon in the top right corner to open the corresponding camera dialog.

Another source of information on all dialogs and parameters of the MOBOTIX camera is the **Reference Manual** (PDF), which consists of the camera's online help. You can download the PDF file from the MOBOTIX website in the **Support > Manuals** section. This section also contains the latest version of the *Software Manual Part 2*.



Camera Help

Camera Status

Declaration of Conformity

Konformitätserklärung gemäß dem Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen (FTEG) und der Richtlinie 1999/5/EG (R&TTE)

Declaration of Conformity in accordance with the Radio and Telecommunications Terminal Equipment Act (FTEG) and Directive 1999/5/EC (R&TTE Directive)

Déclaration de conformité selon la loi sur les équipements hertziens et les équipements terminaux de télécommunication (FTEG) et la directive 1995/5/EC (R&TTE)

Hersteller/verantwortliche Person: Manufacturer/responsible person: Fabricant/personne responsable :	MOBOTIX AG
erklärt, dass das Produkt: declares that the product: déclare que le produit :	Netzwerk-Kamera Network camera Caméra de réseau
Typ: Type: Type :	Q22M
Telekommunikations(Tk-)endeinrichtung Telecommunications terminal equipment Equipement de terminal de télécommunication	Netzwerk-Kamera Network camera Caméra de réseau
Verwendungszweck: Intended purpose: Le but suivi :	Übertragung von Bildern und Toninformationen Transmission of images and audio information Transmission d'images et du son

bei bestimmungsgemäßer Verwendung den grundlegenden Anforderungen des § 3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht.
complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its intended purpose.
est conforme aux exigences fondamentales du paragraphe 3 du FTEG (article 3 du R&TTE) et des autres clauses s'y rapportant.

Gesundheit und Sicherheit gemäß § 3 (1) 1. (Artikel 3 (1) a))
Health and safety requirements pursuant to § 3 (1) 1. (article 3 (1) a))
Santé et sécurité conformes au paragraphe 3 (1) 1. (article 3 (1) a))

angewendete harmonisierte Normen: harmonised standards applied: normes harmonisées :	EN 60950:2000	(NSR 73/23/EWG & 93/68/EWG) (LVD 73/23/EWG & 93/68/EC) (Directive Basse Tension 73/23/EWG & 93/68/EC)

Schutzanforderungen in Bezug auf die elektromagn. Verträglichkeit § 3 (1) 2, Artikel 3 (1) b))
Protection requirements concerning electromagnetic compatibility § 3 (1) 2, (article 3 (1) b))
Exigences de protection concernant la compa tibilité électromagnétique, paragraphe 3 (1) 2; (article 3 (1) b))

angewendete harmonisierte Normen: harmonised standards applied: normes harmonisées :	EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-5 EN 61000-4-6	EN 50121-4:2007 EN 55022:2006 EN 55024:1998+ A1:2001+A2:2003 EN 61000-6-2:2005	(EMV-RL 1995/5/EG (R&TTE)) (EMCD 1995/5/EG (R&TTE)) (Directive EMC 1995/5/EG (R&TTE))
weitere angewendete Normen: other harmonised standards applied: autres normes harmonisées :	EN 55022:2006 AS/NZS 3548	CFR 47, FCC Part 15B CISPR 22:2005 (mod.)	

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Kaiserslautern, 28.05.2008

Ort, Datum
Place & date of issue
Lieu et date

Dr. Ralf Hinkel
Vorstand/CEO, MOBOTIX AG

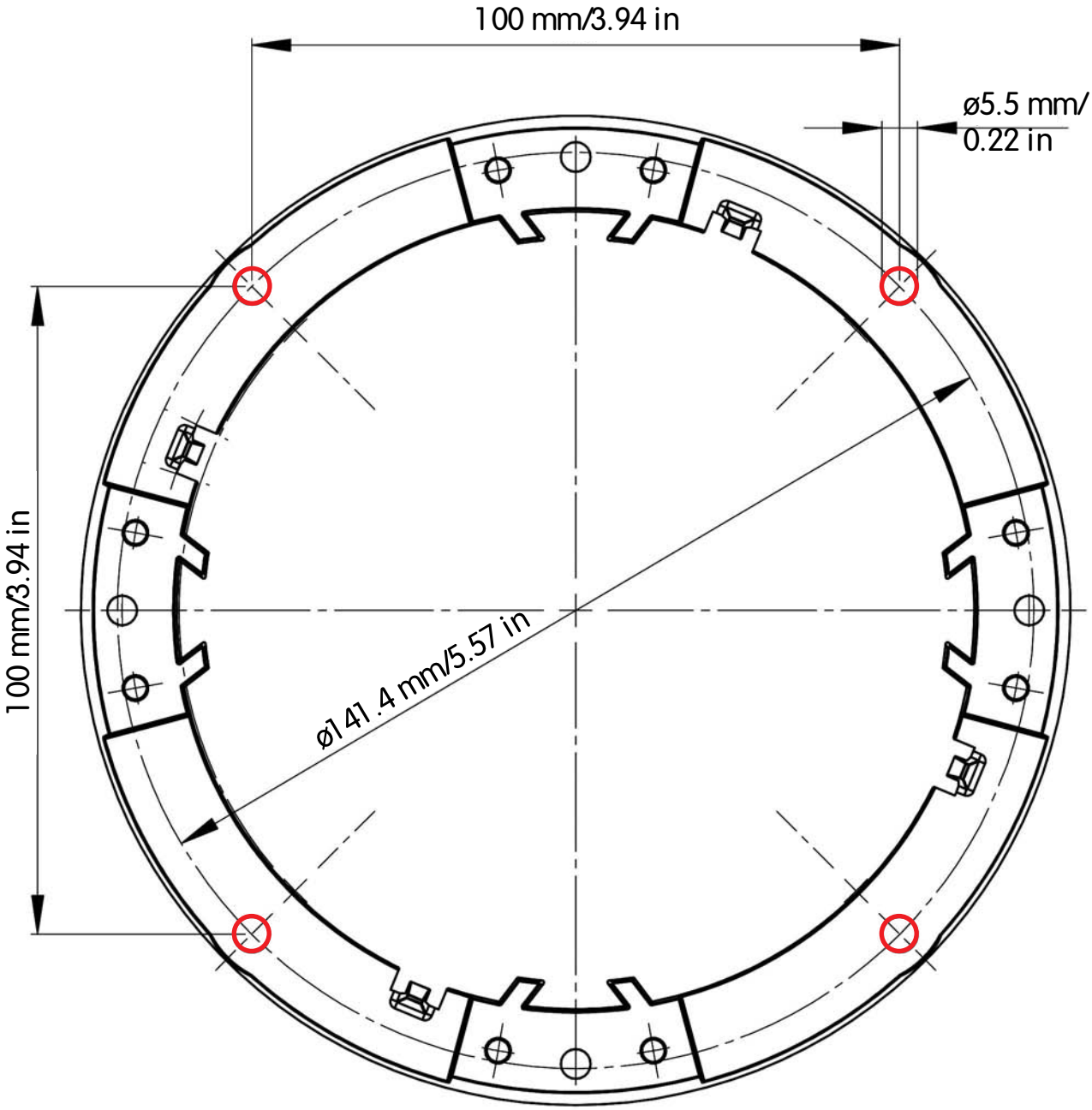
Name und Unterschrift
Name and signature
Nom et signature

Notes:

Notes:

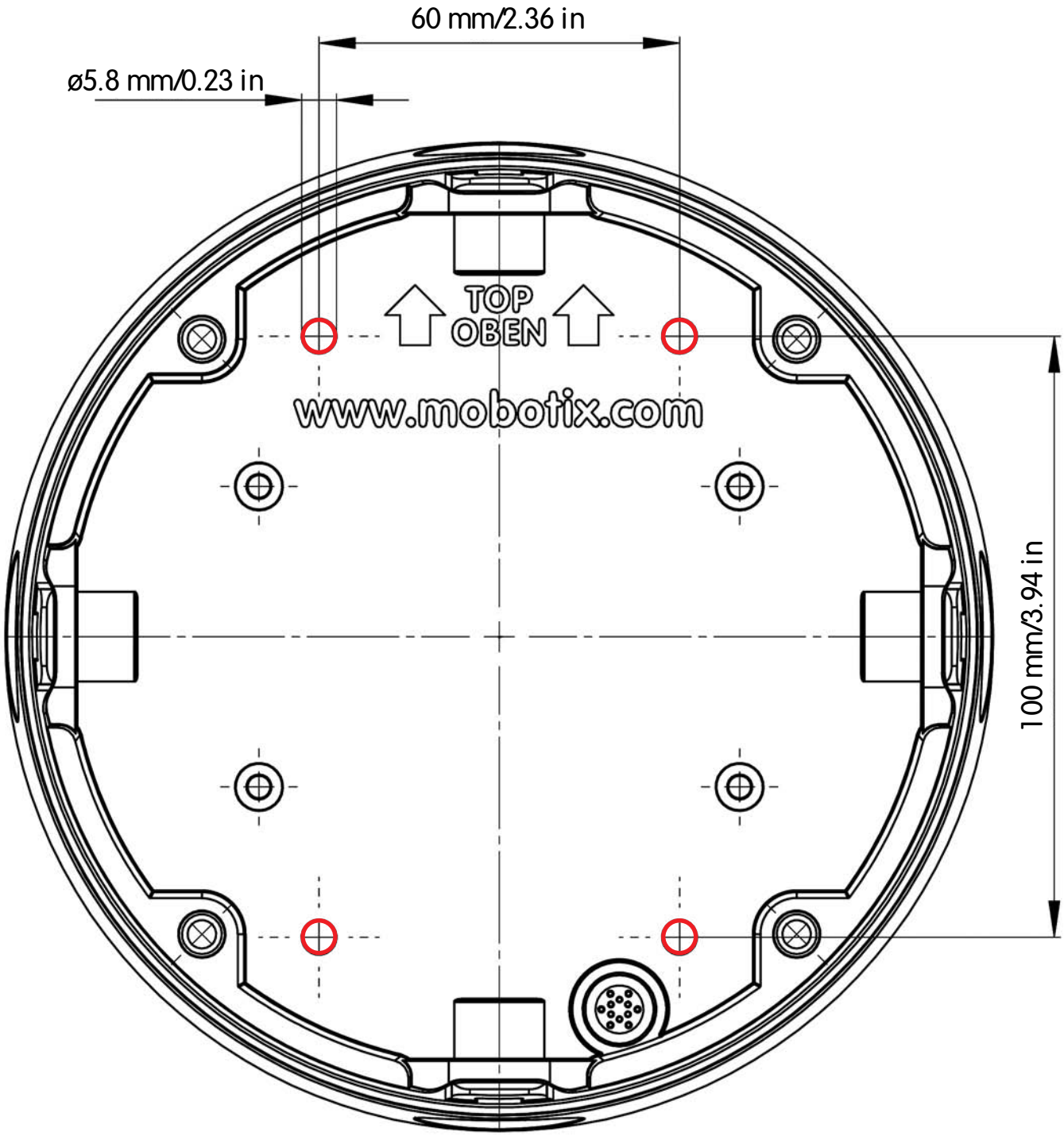
Q22M-IT/SECURE: Drilling Template

Scale 1:1



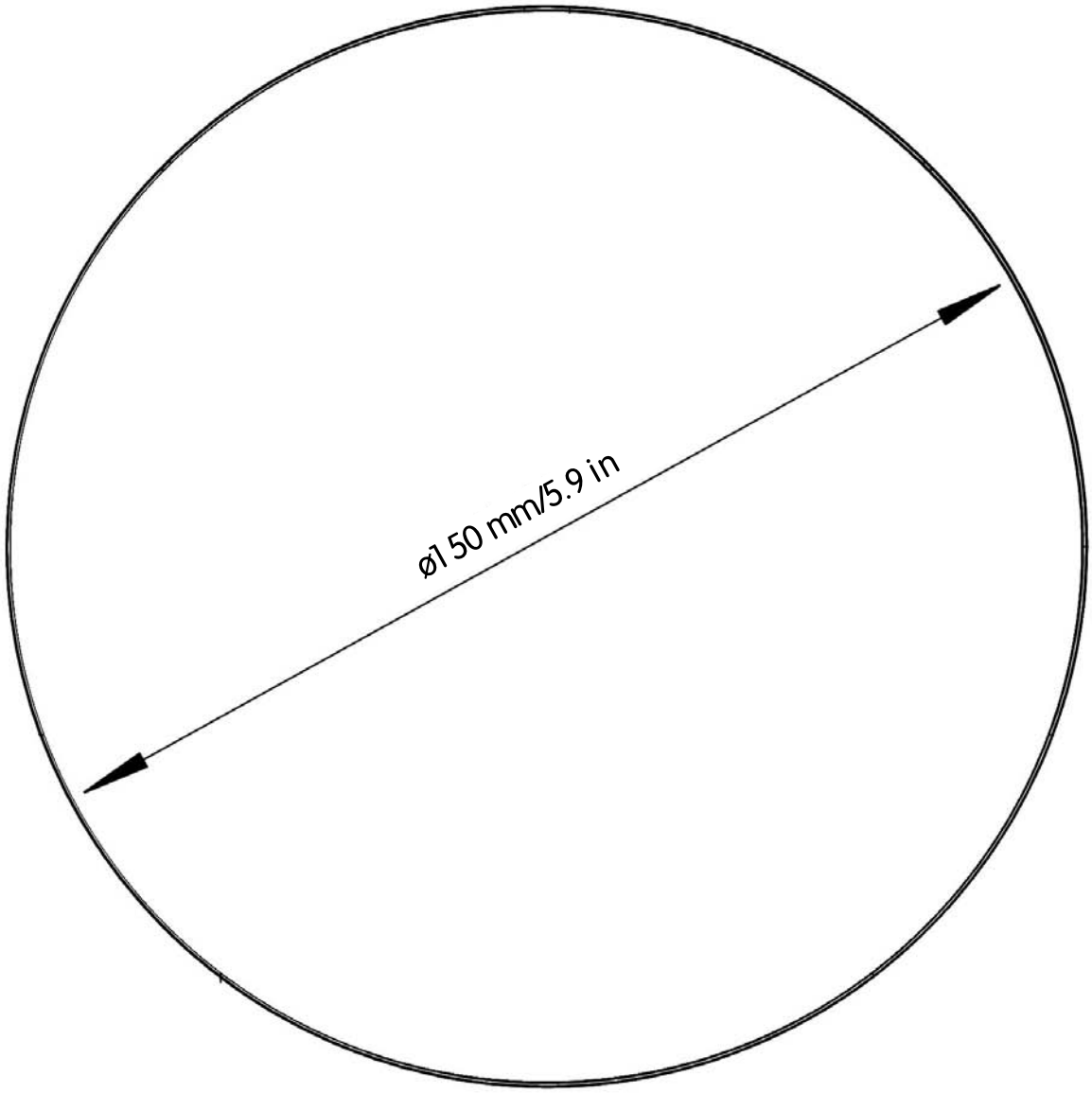
Q22M On-Wall Set: Drilling Template

Scale 1:1



Q22M In-Ceiling Set: Cutting Template

Scale 1:1



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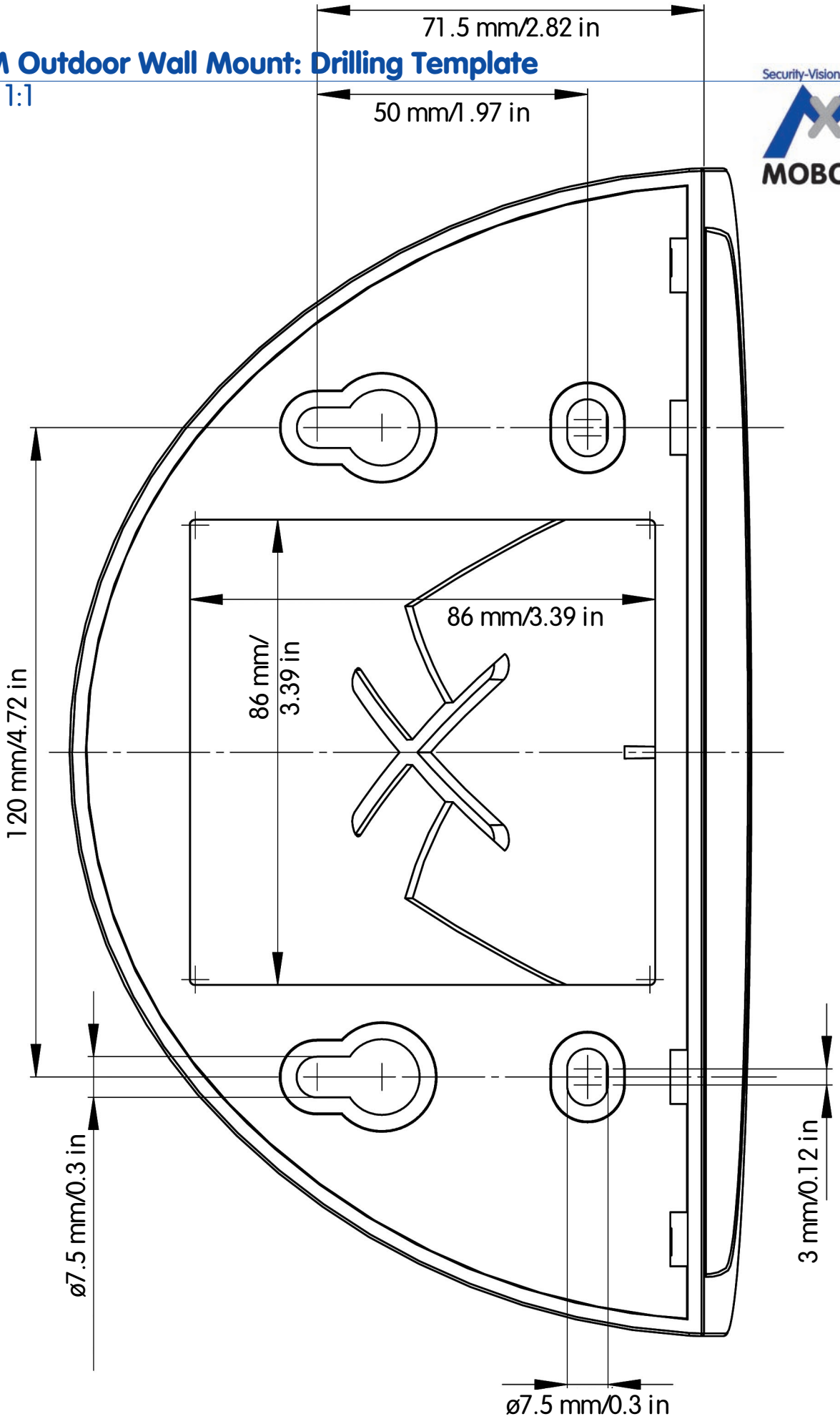
Q22M Outdoor Wall Mount: Drilling Template

Scale 1:1



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MOBOTIX – The HiRes Video Company

Security-Vision-Systems

To demonstrate our confidence in the quality of our products, MOBOTIX cameras were used to capture all the images that appear in this manual.

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CE

Technical specifications subject to change without notice!

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EN

Q22M Camera Manual Part 1

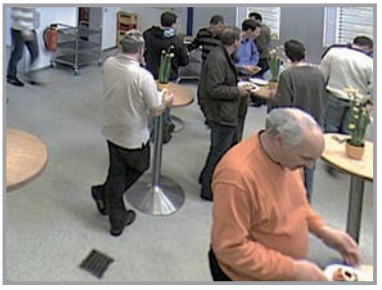
The HiRes Video Company

Allround Easy. Allround Secure.

MOBOTIX' ultra-compact, weatherproof IP Dome camera is so inconspicuous that many do not recognize it to be a camera. Thanks to its 360° allround view, the camera can monitor and record, event-driven, an entire room.

Full Image

Image Correction



Virtual PTZ Features

Powerful performance in complete video solutions ...

- Hemispherical allround view for complete room coverage
- Digital, continuous zooming and panning (virtual PTZ)
- Robust and maintenance-free, without mechanically moving parts
- Event-controlled, complete room recording directly in the camera
- Alarm function, speaker and microphone integrated
- Discreet and inconspicuous design

Current PDF File:
www.mobotix.com > Support > Manuals

MOBOTIX .com

HiRes
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Software zoom

Skyline
Format free
Each image format freely definable

30 Frames/s
VGA (640 x 480)
12 F/s Mega

Virtual PTZ
Digital pan, tilt, zoom

Backlight
Safe using CMOS without mechanical iris

Internal DVR
Internal via SD card, external via Network

Win/Lin/Mac
Recording
via Network on PC up to 1 Terabyte

Microphone & speaker
Audio
bi-directional via IP, variable framerates

SIP-Client with video
IP-Telephony
Alarm notify, cam remote control

Video motion
Multiple windows precision pixel-based

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Weatherproof
- 30° ... +60°C, IP65, no heating necessary

IEEE 802.3af
PoE
Network power even in winter

Robust
No moving parts fiber glass housing

MxCC
Licence free
Video-Management-Software

MX-CM-Q22M-EN-01

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HiRes Video Innovations

The German company MOBOTIX AG is known as the leading pioneer in network camera technology and its decentralized concept has made high-resolution video systems cost-efficient.

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